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NEW YORK  
ZOOLOGICAL SOCIETY

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1895



1952

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FIFTY-SEVENTH  
ANNUAL REPORT  
FOR THE YEAR 1952



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## FIFTY-SEVENTH ANNUAL REPORT FOR THE YEAR 1952

0 East 40th Street, New York 16, N. Y.

HE ZOOLOGICAL PARK

ronx Park, New York 60, N. Y.





MEMBERSHIP IN THE  
NEW YORK ZOOLOGICAL SOCIETY

THE NEW YORK ZOOLOGICAL SOCIETY was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

Membership is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

Annual Membership is \$15. Contributing Membership is \$25. These Memberships entitle the holders to Member's cards and 10 guest tickets of admission to the Zoological Park on pay days; a copy of the Annual Report; a subscription to Animal Kingdom, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building and to attend all open meetings of the Society. Tickets to all sections of the Zoological Park for which an admission charge is made are available, free, to Members upon application at the Administration Building in person. Members will be taken on "behind the scenes" tours of the Zoological Park and Aquarium, without charge, on application, and are entitled to 20% discount on all publications of the Society. We are advised that Contributing Membership fees are deductible from income tax within the legal limits.

Life Membership is \$300. See By-laws for conversion of Annual and Contributing to Life Membership. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

Applications for membership may be submitted to any officer of the Society or to the Society's general office at 30 East 40th Street, New York 16, N. Y.

FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York .....



## REPORT OF THE PRESIDENT

Fairfield Osborn

A REPORT of this character would not be complete if it did not include some perspective of the future. An annual statement, whether it be to members or to shareholders, is not true to its purpose if it reports only the favorable aspects.

It is a matter of some concern that we have not been able to advance our building program for the future at a greater pace. It may be recalled that during the war years, when new construction was impossible and maintenance was difficult, the time was used to develop a magnificent, comprehensive post-war plan including not only the building of the Aquarium but a sweeping modernization of the Zoological Park which would ensure its position as the most beautiful, dramatic and useful institution of its kind in the world.

In the first years after the war obstacles stood in the way. Materials continued to be in short supply, and the call for more housing and other public necessities made it inappropriate for us to attempt to do too much too fast. However, more things were accomplished since the war than some may realize. New major construction took place in the form of the modern, popular Great Apes and Penguin Houses. The Bird House, Small Mammal House and the Pheasant Aviary were improved and modernized. The outdoor areas about the Elephant House were moated. The Question House and new Cafeteria, both highly successful enterprises, were built. A number of other smaller installations were constructed, such as the Platypusary and the enclosures for otters and raccoons. All these items in a long list of improvements add up to the fact that by rigid economy and careful planning the Society staff has been able to go forward to a certain extent with our great project for the Park of the Future. This program is truly an Ocean of Opportunity--for before us there still lie so many valuable things to be done.

It is somewhat ironical that back in 1899 the Park was opened with the Reptile and Aquatic Bird Houses, the Flying Cage, Bear Dens, Wolf and Fox Runs, and a number of paddocks for bison, deer and other hoofed animals--all built and stocked at a total cost of \$250,000. Today remodeling the interior of the Reptile House alone costs more than half that sum!

It is our obligation to the public to continue to build, remodel and modernize as we can find the means to do so. All

our major exhibition buildings except the Great Apes and Penguin Houses have passed or are approaching the 50-year mark.

It is obvious that our institution must seek new revenue sources. Gifts and legacies can be put to uses that are of immeasurable value. We must find ways to do the things we see waiting to be done.

More and more the burden of the Park's and the Aquarium's support must be transferred from the shoulders of the few to those of the many. We are confident that we shall be able in time to realize most of the opportunities presented by our post-war plans, but it will require resourcefulness combined with most prudent operation to do so. We were able once again in 1952 to keep our budget in balance. It is becoming increasingly more difficult to do this. If any member or friend of our institution feels that his support is unimportant to our future, we urge a study of this report in its relation to the Ocean of Opportunity that lies ahead.

\* \* \*

The major event in our year occurred in December when the campaign for funds for the new Aquarium was launched. This largest single project in the history of our institution will be referred to in some detail later in this report. Public reaction to the announcement of this campaign has been gratifying and encouraging. A great task lies ahead in gaining the substantial funds that are needed. Somehow the objective must be reached, for the plans envisage an institution of incomparable interest and significance.

Important administrative changes have been made during the year. The success of any organization rests not only upon conceptual planning but also upon the degree of competence with which operations are conducted. With this in mind it is extremely gratifying to report the changes that have taken place in the administration of the Zoological Park as well as those in the Department of Tropical Research.

The office of Director of the Zoological Park was restored on July 1, 1952, with the appointment of John Tee-Van to fill it. Mr. Tee-Van joined the Society as a youth in 1911. For twenty-six years he worked as an assistant to Dr. Beebe and in 1942 was made Executive Secretary of the Zoological Park. His experience, talents and wisdom make him the obvious choice to carry on the work of his first Director, the late Dr. William T. Hornaday. Sharing his new responsibility is Dr. Leonard J. Goss, Park Veterinarian since 1939, who has been appointed Assistant Director.

Dr. William Beebe will continue active work with the Society as Director Emeritus of the Department of Tropical Research, of which department Miss Jocelyn Crane has been appointed Assistant Director. Dr. Beebe came to the Zoological



Park as it was being constructed, was subsequently appointed first Curator of Birds, and in 1916 founded the Department of Tropical Research under whose aegis he has been the leader of some 51 expeditions.

Lee S. Crandall, who has held the office of General Curator since 1943, and who has been with the Society for 44 years, has been made General Curator Emeritus. He will continue his office at the Zoological Park, where he is now working on a series of books on the care of wild animals in captivity.

Other appointments include Robert M. McClung as Acting Curator of Mammals and Birds, Miss Grace Davall as Assistant Curator of Mammals and Birds, Gordon Cuyler as Administrative Assistant and Herbert J. Knobloch as Assistant Curator of the Department of Education.

These staff changes and promotions were accompanied by a number of other personnel changes throughout the Park, for 1952 saw more retirements among our veteran employees than any other year in Park history. Our best wishes go to these loyal ones who have left us after years of devoted service.

Steady progress has been made in operating improvements in the Zoological Park and several new facilities have been installed. Abominable weather on most week-ends during the late spring and early summer cut attendance--a set-back shared with our comparable sister institutions. This loss in patronage has been reflected in lower revenues from facilities operations. However, returns on invested funds were satisfactory and membership dues reached an all-time high. Memberships showed a net gain for the year, with a continuing trend upward in the new class of Contributing supporters.

\* \* \*

Opportunity beats a steady tattoo on the doors of the Zoological Society and at the gates of the Zoological Park. We are answering as many of her calls as our means permit. Every year finds us facing new challenges and continuing our acceptance of many of the old ones. We must retain our position as leaders in Zoo and Aquarium administration--our first obligation to the public as well as to ourselves. We must continue our contribution to knowledge through the superior work of our scientific staff. We must advance our position as an educational institution by both broadening and refining our function as a teaching source, giving more information with better presentation to more people. We must maintain our stand for the protection of nature. Lastly, we must steadily improve our services to the public so that we may hold our position of leadership among New York's many competing attractions. We can realize the Opportunities in our Ocean with the sustained confidence and support of our friends. "There are as big fish in the sea as ever were caught."

## THE ZOOLOGICAL PARK

John Tee-Van, Director

THE ZOOLOGICAL PARK means many things to many people. To some it is a place where father and the children are sent while mother prepares Sunday dinner. To others it is a place where, in pleasing and calm surroundings, they can review a wonderful representation of the animals that live on the earth with us. To still others, coming from high schools, colleges and universities, it offers the living expression of what would otherwise be static representations in textbooks.

To meet the needs of the people who for myriad reasons come to the Zoological Park means the establishment and maintenance of many services. In this respect the Zoological Park has often been compared to a small municipality, for beyond its all-important animal exhibits it contains most of the basic elements of a small town--banks, transportation systems, stores, sanitation departments, hospitals and the like. But, quite apart from these material services, we constantly are made to realize our relation to the sphere of emotion and the mind.

Unexpectedly the emotional appeal of the Park may come to light, as when a recent letter, occasioned by the death of our old Hippopotamus "Pete," revealed that the writer first had seen Pete in 1904 in Central Park when he was five days old; since then, for 48 years, our correspondent had made an annual pilgrimage to see Pete while on visits from Portland, Maine, to New York! We can only wonderingly surmise how many similar ties exist between our animals, individually or as a whole, and members of the public of all ages.

In the realm of the mind and its manifestations, we are continually amazed at the questions that come to us--sincere questions that reveal the curious turns of human thought as well as the searching interest of human beings in the animal world. Every question (and sometimes there are silly ones) is answered seriously and with the realization that we are expected to be the ultimate answerers; we are looked upon as Authority. They may be questions with involved scientific ramifications, as, "What is the blood pressure of the Giraffe?" Or they may express normal curiosity: "Does a cat have tonsils?" and "How do Skunks stand each other?" Plain-tive and most appealing was the concern of a reptile-devoted

eight-year-old boy: "I have a pet Blue Racer. He has started to bite me. I don't mind the bites because they don't hurt me. But what I want to know is, will the snake be hurt if he keeps on biting me?"

The Zoological Park's 1952 attendance, 2,270,982, was as usual the highest among the City's comparable institutions. Even so this figure, because of very bad weather on week-ends during the spring, was lower than our average. In this regard, a compilation of attendance records of twenty-four New York City institutions, including botanical gardens, museums and zoos, shows a general decline in 1952 and that it was especially marked among the larger institutions. The average decrease was 2.8%. While much of the falling off in attendance of the outdoor institutions such as botanical gardens and the zoos undoubtedly can be attributed to the weather, the reason for an over-all decrease is not easy to determine. Certainly the growing popularity of television must be given consideration.

A newspaper columnist in New York recently stated that the three most popular aspects of television stand in this order: sex, animals and children. This locates the animal world, televisationally speaking, in high but dubious company. Over the past few years the staff at the Zoological Park has devoted a great deal of time and thought to television programs and how best the Society's conception of the animal world can be expressed through this medium of communication. In 1950 a series of twenty-six weekly programs was given over the American Broadcasting Company network, and numerous spot appearances of animals with members of the staff or keepers have been provided since then. During 1952 negotiations and experiments were undertaken with a producing firm, leading to a pilot film that reasonably expresses our idea of what an animal program should be like. Such a program, embodying a proper balance of amusement and education, is a difficult and costly matter. Animal actors are not amenable to rehearsing and persist in going their own way most of the time, regardless of cues and timing. Hence, the program we envisage will be on film, which will obviate one of the major objections to many animal programs--the dependence on some specific animal action, whereas in actual fact the animal either does nothing or the opposite of what is wanted.

Activities of the various animal departments are reported in later pages, but special attention should be called to a few of the more important. "Herbert," our playful young Walrus, continues to be a great drawing card. His weight at the end of the year was logged at 770 pounds. "Dacca," the magnificent and matronly tigress, produced her sixteenth, seventeenth, eighteenth and nineteenth cubs on May 1--a balanced litter of two males and two females that varied only one ounce in their weights, from two pounds seven ounces to



two pounds eight ounces each. A noteworthy addition to the Elephant House's family is "Candy," a young female Asiatic Elephant who upon arrival in August weighed 752 pounds, stood 46 inches high and still had a great deal of her coarse, dark red, baby hair. Her age was estimated to be approximately one year. In the Reptile Department the most important acquisition was an 18-inch specimen of a rare and nearly extinct reptile, the Tuatara. Thereby the Society for the first time in its history is able to exhibit simultaneously all four Orders of living reptiles. The Tuatara, while it looks like a lizard, is only distantly related to those animals and, as Dr. Oliver explained in an Animal Kingdom article, is a rhynchocephalian, the sole survivor of an order of reptiles that flourished 150 million years ago and apparently died out some 75 million years ago. Wolverines, commonly called Gluttons, now occupy the old Giant Panda quarters, and are an interesting, lively exhibit well worthy of their beautiful surroundings.

Occasionally the needs of some of the Zoological Park's rarities must seem incomprehensible to those not intimately acquainted with the animals. Thus, in the Large Bird House it was found necessary to cool the quarters of our hummingbirds during summer time. The principal hummingbirds that we had been receiving came from the slopes of the Andes, and New York summers are much too hot for them. The Tuatara also posed a challenge, as this animal requires a temperature in the order of 50 to 55 degrees. Providing cool quarters for it also gave us an opportunity to install exhibits for Salamanders, Axolotls and similar cool-environment animals.

The new moats in the outer yards of the Great Apes House, redesigned after "Makoko," our large Gorilla, was drowned, have been a successful undertaking and the Orang-utans, Chimpanzees and Gorillas appear to be very happy in their new summer quarters.

The high reputation of the Zoological Society--and this applies markedly to the Zoological Park and the Aquarium--is constantly brought to our attention by the inquiries that come to us for information on zoological societies and how they should be formed, on zoological parks and how they should be founded and developed, on research in zoos and aquariums and on the vast array of technical problems involved in the operation and construction of aquariums. Correspondence about such matters is extensive and conferences numerous.

Furthering our interests beyond our immediate borders, the Society has enabled its staff officers to attend meetings of other organizations and to prosecute studies outside their own laboratories. Among these activities were:

1. In September six members of the staff, Messrs. Atz, Bridges, Coates, Crandall, Goss and Tee-Van, attended one or more



meetings of the American Association of Zoological Parks and Aquariums and the Institute of Park Executives at their Montreal meeting. Our close association with officers of other zoos and aquariums has been well fostered.

2. Doctors Nigrelli and Gordon of the Aquarium staff presented papers before the Society of Protozoologists of the American Society of Zoologists at the annual meeting of the American Association for the Advancement of Science held in Philadelphia.
3. Dr. Goss attended the Annual Conference for Veterinarians at the New York State Veterinary College at Cornell University on January 9 to 11.
4. Dr. Myron Gordon went to California to discuss the completion of a book on the fishes of northeastern Mexico and then to Mexico for the collection of fishes from the state of Tabasco.
5. Curator-Aquarist Coates attended the first annual meeting of the Northeast Sections of the American Fisheries Society, the International Association of Game, Fish and Conservation Commissioners and the Wildlife Society, held April 1 to 4 at Jackson's Mill, Weston, West Virginia.
6. Various members of the Aquarium staff attended the forty-third annual meeting of the American Association for Cancer Research, and presented three papers.
7. Mr. Bridges, Curator of Publications and Photography, and Mr. Dunton, Staff Photographer, spent three weeks at Dr. Beebe's laboratory at Simla, Trinidad, to make a motion picture showing the field activities of the Department of Tropical Research and to bring back reptiles and other animals to the Park.
8. Curator Coates attended the annual meeting of the Federation of American Societies for Experimental Biology.
9. Dr. Gordon participated in the sixth annual symposium on Fundamental Cancer Research in Houston, Texas, where he also spoke to the Houston Aquarium Society.
10. Dr. Nigrelli spent one month at the Lerner Marine Laboratory in Bimini in the British West Indies, studying tumors of fishes and testing various newly-developed helminthicides.
11. Dr. Goss attended the annual convention of the American Veterinary Medical Association in Atlantic City on June 23 to 26.
12. Doctors Nigrelli and Gordon attended the meetings of the American Institute of Biological Sciences at Cornell University in August.
13. Dr. Nigrelli attended the meeting of the Atlantic Fisheries Biologists at Kenyon, Rhode Island, in September.

Numerous research activities of the staff members will be found detailed in the reports of the departments. Special mention should be made, however, of the first-rate research-educational motion picture, "The Locomotion of Snakes," produced by Dr. Oliver. This is the first of a series. It brings out most vividly the four types of locomotion utilized by snakes to progress on land or water or through trees, and through X-ray photography settles once and for all the question whether the ribs are used in locomotion by snakes which progress by the rectilinear or caterpillar method.

Research on animal behavior in the Zoological Park continues under the supervision of Dr. John Quaranta, Research Associate. It is hoped that this most interesting field of research will be expanded in scope and activities in the near future.

Visitors to the Zoological Park of special note were Lord Willingdon, President of the Fauna Preservation Society, and Lady Willingdon; Dr. Van Straelen, President of the Institute of National Parks of the Belgian Congo and Director of the Royal Museum of Natural History of Belgium; Dr. Grzimek, Director of the Frankfort Zoo; and Captain Cousteau, who has been doing such remarkable undersea work.

A luncheon of fellow sculptors and members of the staff was held to honor Mrs. Anna Hyatt Huntington on the occasion of the opening of her animal sculpture show in the Heads and Horns Museum.

The Society was host to forty members of a UNESCO Seminar Group devoted to the "Role of Education in Museums" at a dinner and meeting at the Zoological Park.

The Zoological Park Council, the organization of elected representatives of employees of the various departments and staff officers which meets bi-weekly to discuss the operation of the Park and its personnel problems, continues to function exceptionally well. Of prime importance among matters in 1952 that were originated, discussed and prosecuted by the Council was coverage as of January 1 of Group Life Insurance for Society employees. The Society's acceptance of its share of the cost of this insurance is a forward step in our personnel relations and one that has been much appreciated by the employees who had signified their desire to contribute toward this type of insurance.

The Zoological Park's Safety Committee has functioned extremely well during the past year and is a potent factor in reducing accidents. The sky-rocketing costs of insurance make the Committee's work of even greater importance than heretofore. Its recommendations and suggestions have been given first priority for accomplishment.

The past year saw the largest number of retirements in any one year of the Society's history. Nineteen employees and staff officers, all of them covered by Social Security

and many by both pension and Social Security, left our services. The major retirement was that of our General Curator, Lee S. Crandall, who will now have an opportunity to develop much needed publications on the care of wild animals in captivity. Other changes in responsibilities and titles were the re-establishment of the title of Director and the appointment of Dr. Leonard J. Goss to the new post of Assistant Director; a number of other changes will be found in the listing of staff. The exceptionally large number of retirements represented employees of advanced age who entered our service during the war years. Being unable because of age to enter the Pension Fund, they were retained in service until they could be covered by Social Security.

A new post, that of Assistant Veterinarian, was filled on January 1 by Dr. Charles P. Gandall. This enables Dr. Leonard J. Goss, Assistant Director and Veterinarian, to function on a more extended basis and provides for the continuation and elaboration of research in the Animal Hospital.

"Zoolog," the Zoological Park's employee newspaper, under the editorship of Gordon Cuyler, Administrative Assistant, with sub-editors from various departments, continues to function as an excellent medium for keeping our employees informed as to what is happening in the Park. News of the acquisition of new animals, their removal from one place to another, the setting up of new rules and regulations, and so on, is thus immediately made known to all our employees. They are expected to be aware of such matters, and obviously this is of value to visitors, who are likely to depend on uniformed employees for information about exhibits.

Major construction during the year consisted of the re-roofing of the Reptile House at a cost of \$87,000, paid from the capital budget of the City of New York. In the northeastern corner of the Park a new parking field is almost completed and will be ready for operation in the early spring of 1953. This field, with entrance and exit roads connecting with the Bronx River Parkway, will form an important element in our services to the public. When in operation, it will be connected with the rest of the Park through our Tractor Train system. The new Cafeteria, opened a few weeks before the beginning of the year, has functioned splendidly.



## THE ANIMAL DEPARTMENTS

### MAMMALS AND BIRDS

Lee S. Crandall, General Curator (January 1 to July 31, 1952)  
Robert M. McClung, Acting Curator, Mammals and Birds  
(since August 1, 1952)

Grace Davall, Assistant Curator, Mammals and Birds  
August Schilling, Head Keeper of Mammals  
George Scott, Head Keeper of Birds

AS IN THE PAST several years, the problems of securing outstanding new exhibits and replacing normal losses continue to mount in difficulty. With great areas of the world cut off from exchange or collecting because of the political situation, with ever-mounting costs of transportation, and with severe government restrictions on the importation of various groups of animals, more emphasis must gradually be placed on the breeding of replacements and the securing of new specimens by exchanges with other zoological parks. In spite of the difficulties, a number of rare and outstanding new specimens were secured during the past year.

With the adoption of a shorter work week on October 1, 1952, it was necessary to employ additional keepers--two for the Mammal Department and one for the Bird Department.

From September 15 to 18, General Curator Emeritus Lee S. Crandall attended the annual meeting of the American Institute of Park Executives in Montreal, where he gave a report on European zoos visited in 1951, as well as a summary on the 1951 meeting of the International Union of Directors of Zoological Parks, held in Amsterdam.

At the Montreal meeting, the American Association of Zoological Parks and Aquariums presented Mr. Crandall with a written testimonial "in recognition of the great collections he formed at the New York Zoological Park as Curator of Birds and as General Curator; for his many contributions to the art and practice of exhibiting wild animals; and in appreciation of him as a friend and collaborator." Since his retirement as General Curator in July, Mr. Crandall has continued actively at the Park, engaged in the preparation of a series of books on the care of captive wild animals.

MAMMALS - Births in the collection numbered 87, of which 68 were still living on December 31. These represented 30 dif-

ferent forms as follows: 1 Guinea Baboon, 1 Uele Colobus, 3 Common Marmosets, 1 Black-tailed Marmoset, 1 Slow Loris, 2 Patagonian Cavies, 4 Bengal Tigers, 1 Northern Rocky Mountain Wolf, 1 Gayal, 3 Mouflon, 4 Aoudad, 1 Blue Duiker, 1 Chestnut Duiker, 4 Nyalas, 1 Eland, 4 Blackbuck, 3 Guanacos, 3 Reeves's Muntjac, 3 Axis Deer, 3 Red Deer, 2 Fallow Deer, 2 Barasingha Deer, 2 Indian Sambar Deer, 1 Formosan Deer, 1 Dybowski's Deer, 5 Sika Deer, 2 Pere David's Deer, 1 Chinese Water Deer, 4 White-tailed Deer, 3 Elk.

Besides births, a total of 50 other arrivals were recorded--26 purchases, 22 gifts, and two collected.

Outstanding among the purchases were four European Wolverine cubs, collected in Finnish Lapland, and received here in May when they were approximately three months old. These four, consisting of a male and three females, weighed only six to eight pounds each upon arrival and still retained their short woolly first coats. Purchased to establish an outstanding new exhibit in our former Giant Panda moated area, since there is little likelihood of our soon securing another Giant Panda, the Wolverines have flourished and have now attained practically adult size. Their weights ranged from 25 to 38 pounds on September 13, the last weighing.

A year-old, 752-pound female Asiatic Elephant from Siam was purchased in August, and proved to be an instant success with the public. Because of housing difficulties, "Candy," as she has been named, was first quartered in the Antelope House. On December 18 she was moved to the Elephant House, her permanent residence. It is planned to use her as a riding elephant when she is old enough, probably in 1954, as "Burma" was used, to the delight of thousands of children, in 1942.

Other important additions included the purchase of a pair of young Grant Zebras, a form which has not been represented in our collections since 1944. A year-old male Sable Antelope was secured to replace our fine specimen which died in September.

"Herbert," our young Atlantic Walrus, continues to be one of the most popular and endearing animals in the Zoo. Born in the spring of 1951, "Herbert's" daily consumption of fish has been increased from 12 pounds, soon after arrival, to 40 pounds in December, 1952. His weight was 770 pounds at the end of 1952, an increase of 490 pounds in slightly more than a year.

Interesting as a "first" in the New York Zoological Park, and in any zoo, as far as we know, was the birth in September of a Uele Colobus monkey, as reported in the November-December issue of "Animal Kingdom." The youngster continues to flourish and is rapidly assuming the striking black and white pelage of its parents, in contrast to its all-white natal coat.

Four species of Primates which we had never before exhibited were acquired during the year. One of these was a Dusky Titi Monkey, Callicebus ustofuscus. The other three "firsts" were marmosets--a Black-faced White Marmoset, Mico melanoleucus; two Red-mantled Marmosets, Mystax lagonotus; and a Pied Marmoset, Mystax bicolor. We had 24 marmosets of 14 different species at the end of the year.

Several important losses were suffered in the mammal collection during the past year. Our old Okapi, received here

# CENSUS OF MAMMALS

December 31, 1952

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
MONOTREMATA		
Platypus and Echidnas .....	2	3
MARSUPIALIA		
Kangaroos, Opossums, etc. ....	11	20
INSECTIVORA		
Moles, Shrews, Hedge-		
hogs, etc. ....	2	2
PRIMATES		
Apes, Baboons, Monkeys,		
Lemurs, etc. ....	56	99
EDENTATA		
Armadillos, Sloths		
and Anteaters .....	2	3
LAGOMORPHA		
Rabbits and Hares .....	1	1
RODENTIA		
Squirrels, Marmots,		
Beavers, etc. ....	16	30
CARNIVORA		
Cats, Dogs, Bears, etc. ....	31	80
PINNIPEDIA		
Sea Lions, Walruses,		
Seals .....	4	9
PROBOSCIDEA		
Elephants .....	3	5
PERISSODACTYLA		
Rhinoceroses, Horses,		
Tapirs .....	6	9
ARTIODACTYLA		
Hippopotamuses, Camels,		
Deer, Cattle, etc. ....	<u>59</u>	<u>301</u>
<u>Totals</u>	193	562

Summary: Orders, 12; Species, 193; Specimens, 562



in August, 1937, was finally dispatched September 5, 1952, because of a crippling arthritic condition in his forelegs. Our Kiang, or Tibetan Wild Ass, a zoo resident since 1929, had to be destroyed on November 25 when it was found with multiple fractures of two legs.

Our pair of Mountain Tapirs, the first and only ones in captivity, both died during the year. The male, received in June, 1952, lived only four and a half months, dying November 2, 1952. The female, received November 26, 1950, survived more than two years and died on December 8, 1952, from tuberculosis. It is hoped that we can eventually secure one or more of these rare animals again.

Our magnificent bull African Forest Elephant, estimated to have been born in 1932, had become increasingly dangerous and unpredictable as he matured, a condition which zoo after zoo has experienced with captive male elephants. Finally, with reluctance, it was decided that the safety of keepers and public demanded that he be destroyed. This was accomplished in November, 1952.

During the year 19 surplus mammals were sold for a total of \$6,830.

BIRDS - No new installations for birds were constructed during 1952. However, the entire interior of the Ostrich House was repainted in accord with the fresh and attractive new color scheme which is gradually being applied to the entire Park.

Arrivals totalled 232 specimens, of which 105 were acquired by purchase, 101 by gift and two by exchange, while nine were collected by members of the department and 15 were hatched in the Park.

The most important group arrival was the purchase in June of 27 Ecuadorean birds of 23 species, collected by Charles Cordier. Thirteen of these birds were firsts to our collections. The most rare and unusual specimens were a White-backed Dipper, an Ocellated Tapaculo and a fine specimen of the Eastern Giant Hummingbird, a species which attains a length of  $8\frac{1}{2}$  inches and which had never before been exhibited, to our knowledge.

Following is the complete list of forms acquired in 1952 which have proved to be new to our collections:

Train-bearing Hermit - Phaethornis syrmatorphorus syrmatorphorus Gould

Blue-headed Sapphire - Hylocharis grayi grayi (De Lattre & Bourcier)

Northern Giant Hummingbird - Patagona gigas peruviana Boucard

Shining Sunbeam - Aglaeactis cupripennis cupripennis (Bourcier)

Parduzaki's Sun Angel - Heliangelus exortis (Fraser)

Broad-billed Motmot - Electron platyrhynchum platyrhynchum  
 (Leadbeater)  
 Giant Ant-pitta - Grallaria gigantea gigantea Lawrence  
 Ecuadorean Ocellated Tapaculo - Acropternis orthonyx infus-  
cata (Salvadori & Festa)  
 Black-winged Water-tyrant - Fluvicola climazura atripennis  
 Sclater  
 White-backed Dipper - Cinclus leucocephalus leuconotus Scla-  
 ter  
 Black-capped Wren - Thryothorus nigricapillus nigricapillus  
 Sclater  
 Baird's Warbler - Myioborus melanocephalus bairdi Salvin  
 Heck's Grass Finch - Poephila acuticauda hecki Heinroth  
 Black-billed Giant Cacique - Psarocolius angustifrons angus-  
frons (Spix)  
 Vassori's Calliste - Tangara vassorii vassorii (Boissonneau)  
 Ecuadorean Slate-colored Seedeater - Sporophila schistacea  
incerta Riley

Especially noteworthy arrivals included a pair of Palawan Peacock Pheasants, bought in July, and a male Wilson's Bird of Paradise, purchased from the Rotterdam Zoo in August. This is the first specimen of this strange and beautiful little Bird of Paradise we have exhibited in many years. Late in the year a splendid Bearded Vulture, or Lammergeyer, and a Pondicherry Vulture were secured from Zoo Wassenaar, Holland.

Among the many additions to our large and varied waterfowl collection are an Indian Spot-billed Duck and a pair each of Chestnut-breasted Teal, Bahama Duck and European Shelduck.

During the month of September, a number of Mallards and Black Ducks were found dead or dying of botulism in our ponds and streams. These were practically all wild, full-winged individuals which had evidently picked up this deadly bacterial infection elsewhere and then flown to our ponds. Our own waterfowl were comparatively unaffected until late September when, through a severe local infection, we rapidly lost a pair of Mute Swans, with their three cygnets, as well as a Black-necked Swan. Various other birds were affected, but survived.

Our pair of European Cranes hatched and reared a young bird on the African Plains, the first instance of this species successfully rearing an offspring in the Park.



CENSUS OF BIRDS  
December 31, 1952

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
STRUTHIONIFORMES		
Ostriches .....	1	1
RHEIFORMES		
Rheas .....	2	3
CASUARIFORMES		
Cassowaries and Emus .....	2	3
TINAMIFORMES		
Tinamous .....	1	1
SPHENISCIFORMES		
Penguins .....	7	18
PELECANIFORMES		
Pelicans, Cormorants, etc. ....	7	17
CICONIIFORMES		
Herons, Ibises, Storks, Flamingos, etc. ....	28	58
ANSERIFORMES		
Swans, Ducks, Geese and Screamers .....	66	410
FALCONIFORMES		
Vultures, Hawks and Eagles .....	24	28
GALLIFORMES		
Quail, Pheasants, etc. ....	46	120
GRUIFORMES		
Hemipodes, Cranes, Trumpet- ers, Rails, etc. ....	23	49
CHARADRIIFORMES		
Plovers, Sandpipers, Gulls, etc. ....	13	36
COLUMBIFORMES		
Pigeons, Doves and Sandgrouse .....	33	79
PSITTACIFORMES		
Parrots, etc. ....	22	32
CUCULIFORMES		
Touracos and Cuckoos .....	5	7
STRIGIFORMES		
Owls .....	9	15
APODIFORMES		
Hummingbirds .....	5	10
COLIIFORMES		
Colies .....	1	1

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
TROGONIFORMES		
Trogons and Quetzals .....	1	3
CORACIIFORMES		
Kingfishers, Hornbills, etc. ....	11	11
PICIFORMES		
Barbets, Toucans and Woodpeckers .....	27	36
PASSERIFORMES		
Perching Birds .....	207	461
<u>Totals</u>	541	1,399

Summary:      Orders, 22;      Species, 541;      Specimens, 1,399

## DEPARTMENT OF REPTILES

James A. Oliver, Curator  
Fred Taggart, Head Keeper

THE YEAR 1952 in this department was highlighted by a new record in the history of our exhibition program. For the first time since the Zoological Park opened in 1899 we were able to exhibit all of the orders of living reptiles. This record was made possible by the acquisition of our first live Tuatara, the sole survivor of an order of reptiles that flourished more than 150 million years ago. Other milestones of lesser note were passed during the year, but on the whole, it was largely a period of operation under the difficulties of construction activities in the Reptile House.

Our Tuatara is one of three specimens sent to American zoological parks as a gift from the Government of New Zealand. The arrival of these three individuals at the San Diego Zoo, the Brookfield Zoo in Chicago, and at our Zoological Park marked the first occasion in the past twenty-five years that this rare reptile has been exhibited by a zoo in this country. The Tuatara, scientifically known as Sphenodon punctatus, survives today only on a few small, rocky islets off the coast of New Zealand. The animal was so close to extinction that the Government of New Zealand has rigidly protected it and has not allowed any specimens to be exported in the last quarter of a century. The reptile has responded to the protective measures and appears to be increasing in numbers. Encouraged by this, the Government has allowed four specimens to be sent out, more or less on a trial basis. The fourth individual was sent to the London Zoo.

Needless to say, we hope that this experiment will prove highly successful and that all four will live to a ripe old age in their new homes. Our specimen appears to be comfortably settled in the specially constructed enclosure where it lives under temperature conditions approximating those of its native island home.

The name of this department was officially changed back to its original designation, the Department of Reptiles. This is more in keeping with the functions of the department and the training of the staff. The two popular insect exhibits, the Bee Tree and Parasol Ant Colony, are still maintained in the lobby of the Reptile House.

The major construction operations included the removal

of the old roof and the installation of a new roof. The scheduled operations were to extend from March until August, involving the warmer part of the year. However, the prolonged steel strike and contractor's errors delayed the completion of the job until the end of the year. Thus throughout most of the year the reptile collection was maintained and exhibited under considerable difficulties. The fact that we were able to maintain it under these trying conditions is attributable primarily to the foresight and extra care given by the Keepers.

Now that work on the new roof has been completed, we are ready to begin remodeling the interior of the building. This will involve a complete renovation of cages and pools in the main section of the Reptile House. It will include an increase and improvement in the exhibition areas, as well as modern provisions for maintaining a large and diverse collection of reptiles. Laboratory space for research on reptiles is included in the plans. The final architectural specifications for the renovation program are virtually completed and it is anticipated that work will begin early in March. The Reptile House will be closed during the spring months, but it is hoped that the work can be completed in time to reopen the building early in the summer. The planned renovation will vastly alter the appearance of the interior, so that the reopened Reptile House will be virtually a new building. A larger and more varied collection of reptiles, housed in attractively lighted cages, will await the visitor on the date of reopening.

Two important construction projects of a smaller scale were the refrigeration unit of cages for the Tuatara and the snake photography arena. The refrigeration unit consists of a large, insulated enclosure in which are located the cage for the Tuatara and seven small cages for salamanders that require cool temperatures. The animals in this unit make an attractive exhibit and show the public some of the seldom seen but common amphibians.

The snake photography arena provides a permanent installation wherein movies and still photographs of snakes and other large reptiles can be made under simulated natural conditions at all times of the year. The arena is so designed that large venomous snakes can be photographed in safety. It has already proved its value, since most of the scenes in the movie on the "Locomotion of Snakes" were filmed in this arena.

**REPTILES AND AMPHIBIANS** - Because of the pending plans to renovate the interior of the Reptile House, no attempt was made to expand the collection. However, during the year there was an over-all increase in the total number of species and specimens on hand. A sizeable exhibition stock was maintained



and a number of unusual and rare species were added. Foremost among these is the already mentioned Tuatara that we exhibited for the first time in our history. Other species that were new to our collections include the Cuban Giant Anoles, the Paraguayan Caiman, the Gray Monitor, the Ladder Snake, the Crossed Pit Viper and Hermann's Tortoise. In addition to these forms, a number of outstanding "old friends" were shown after absences of several years. High on the list in this group are: Paradox Frogs, Broad-nosed Crocodile, Slender-snouted Crocodile, Alligator Snapping Turtles (one weighing 85 pounds) and Spiny-legged Dabb Lizards.

During the year we received 321 specimens as gifts, 118 on exchange and 103 through purchase.

In the same period we sent out some 136 specimens on the exchanges mentioned above. Gifts and exchanges during the past year involved the following institutions in the United States: the American Museum of Natural History, University of Colorado Museum, Lincoln Park Zoo, Philadelphia Zoo, San Diego Zoo, Staten Island Zoo and Trailside Museum at Bear Mountain Park. Foreign individuals and institutions that participated in gifts or exchanges to the Zoological Park during the past year were: Cap Ferrat Vivarium, France; Dr. Popp, Dessau, Germany; Instituto Butantan, Sao Paulo, Brazil; Royal Zoological Society of Ireland; Lt. Colonel J.S. Wilkins, England; and the Tel-Aviv Zoological Gardens, Israel.

# CENSUS OF REPTILES AND AMPHIBIANS December 31, 1952

<u>Orders</u>	<u>Species</u>	<u>Specimens</u>
<u>AMPHIBIA</u>		
CAUDATA		
Salamanders .....	5	15
SALIENTIA		
Frogs and Toads .....	15	30
<u>REPTILIA</u>		
CROCODYLIA		
Alligators and Crocodiles .....	7	33
RHYNCOCEPHALIA		
Tuatara .....	1	1
SQUAMATA		
Lizards .....	21	37
Snakes .....	60	113
TESTUDINATA		
Turtles and Tortoises .....	<u>46</u>	<u>205</u>
<u>Totals</u>	155	434

Summary:      Orders, 6;      Species, 155;      Specimens, 434

Research work carried on in the Department involved a variety of subjects, from snake venoms to growth in caimans. A number of these projects were pursued in co-operation with other departments and institutions. In several instances we supplied the materials for specific investigations that were undertaken elsewhere. This work included studies in anatomy, animal behavior, neurology, parasitology, pathology and serology.

A program of research on snake venoms was initiated in co-operation with Drs. Goss and Gandal of the Animal Hospital. This work was carried out at Fordham University in laboratory space kindly made available to us by the Rev. J. Franklin Ewing, S.J., and the Rev. Eugene A. Gisell, S.J. The first phases involve an analysis of different techniques of handling venoms, the visible hemolytic effects of Cottonmouth venom, and the relative effectiveness of cortisone, antihistamine and antivenin in the treatment of snakebite. An article appeared in number four of Copeia for 1952 on "Antivenin Available for the Treatment of Snakebite" by James A. Oliver and Leonard J. Goss.

The Curator of Reptiles spent a good deal of time in co-operation with Staff Photographer Sam Dunton and Curator of Publications William Bridges on the preparation of an educational motion picture on the locomotion of snakes. This is the first in a planned series of scientific educational films on living reptiles. Much of the photography was done in the newly constructed snake photography arena. Through the generosity of Dr. James S. Watson, Jr., the wonderful facilities of the Department of Radiology at the University of Rochester Medical School were made available for the analysis of one type of snake locomotion. Dr. Oliver and Mr. Dunton journeyed to Rochester to get the first X-ray motion pictures ever made of a snake performing the rectilinear or caterpillar type of locomotion. Dr. Watson and Mr. Sydney Weinberg recorded the details of this type of locomotion on their giant cinefluorographic camera and provided us with the X-ray footage used in our completed film on locomotion.

Dr. Oliver published four articles in Animal Kingdom during the year. These were:

"What Is It? Animal? Vegetable? Mineral?" (on the Matamoras Turtle). Vol. 55, No. 1, pp. 10-12.

"Our New Giant Toad is a New Species." Vol. 55, No. 1, p. 25.

"Frogs as Friends of Man." Vol. 55, No. 2, pp. 38-45.

"The Prevention and Treatment of Snakebite." Vol. 55, No. 3, pp. 66-83.

The last of these articles, expanded slightly with additional material and illustrations, has been published as a special publication on sale by the Society. Since the article

stresses prevention, it is hoped that it will have a wide distribution among those who spend much time out of doors.

During the year Dr. Oliver presented lectures on snakes to the Bronx Valley Council of the Boy Scouts of America, Beech Hill School in Yonkers, Walter Stillman School in Tenafly, the Exchange Club of Yonkers and the Adirondack Mountain Club. He participated in the annual "Zooquiz" of the Bronx Rotary Club and gave four lectures in the In-Service Teachers Course at the Zoological Park. An informal discussion of snake venoms was presented to the Physiology Seminar at Columbia University Medical School.

## ANIMAL HOSPITAL

Leonard J. Goss, Assistant Director; Veterinarian  
Charles P. Gandal, Assistant Veterinarian

BOTULISM HAS BEEN KNOWN as a disease of man since 1870. The causative agent, a poison liberated by bacteria, has been recovered from hams, sausage and other meat products and from canned vegetables. The organism is commonly present in the soil in all parts of the world. The toxin develops in contaminated, imperfectly sterilized foods only in the absence of air.

Since about 1918 the disease has been recognized in animals. In 1932 it was estimated that a quarter of a million ducks died of the disease at the northern end of Great Salt Lake alone.

For a number of years botulism occurred in the Park during the hot, dry, summer months. By preventing the accumulation of algae and other organic material and keeping fresh water running through our ponds and lakes, we are generally able to avoid the disease. Its explosive character is a constant threat, however.

In the latter part of the past summer numerous dead and dying wild ducks were found on lakes and ponds in the Zoological Park. These birds suffered from botulism and apparently had ingested botulinus toxin-laden water in lakes outside our boundaries. No cases occurred in birds living on Park lakes. Suddenly on September 21 a family of three Mute Swan cygnets, their parents, a Black Swan and a Black-necked Swan came down with the disease. The Mute Swans all died within twenty-four hours and the Black-necked Swan a few days later. While many other birds were exposed to the same water, none was affected. It is reasonable to assume that the toxin emanated from organic material in the bottom of the lake, and in all probability the habit of swans of feeding off the bottom of lakes and ponds accounts for their deaths. The diagnosis of botulism was confirmed by mouse inoculation.

The American Institute of Biological Sciences of the National Research Council is preparing a "Handbook of Biological Data" which will report the nutrient requirements of as many animal and plant forms as possible. Dr. Gandal and Mr. McClung, with the assistance of the keepers, prepared data on the kinds and amounts of foods eaten by 72 different Zoo animals of 19 Orders. This material will be included in the Handbook.



The Atomic Energy Laboratories at Oak Ridge, Tennessee, requested certain bones from elephants and giraffes. Fortunately for them we were able to accommodate them with the elephant bones, following an autopsy of a young Indian Elephant belonging to an animal importer.

Dr. Gandal instituted investigation designed to develop more satisfactory anesthetics for birds.

In collaboration with Dr. Oliver and with the facilities of Fordham University, research was started on therapeutic and diagnostic measures for snake bite poisoning.

Two trials were made with the oral administration of stilbesterol to control sexual activity in male animals, one with the African Elephant and the other with a Rhesus Monkey. Both trials were successful from the standpoint of controlling sex drive, but had no effect in curtailing acts of violence. The elephant, imported in 1946 at an estimated age of 14 years, continued to be a source of danger to the Park personnel and public and was dispatched on November 14. At that time he weighed 6,600 pounds.

Several X-rays were made demonstrating the presence of feti in the oviduct of a Cottonmouth Moccasin and a Red Rattlesnake. These pictures were of value to the Reptile Department for its production of motion pictures of the birth of snakes.

Bone pinning equipment was procured for use in repair of fractures. Several cases, which otherwise would have necessitated amputation, made excellent recoveries as a result of the installation of metal pins in the fractured bones.

The male Okapi received in August, 1937, was euthanized on September 5. This rare and beautiful animal--the first ever exhibited in America--was incapacitated by arthritis to such a degree that he could no longer be kept on exhibition.

The young male Mountain Tapir received June 19, 1952, died of enteritis on November 2, and the female, in the collection since November 26, 1950, died of tuberculosis on December 8.

Late in 1951 the old cow Moose developed an infection of the right foot which slowly responded to surgery and intravenous administration of sulfapyridine and aureomycin and penicillin intramuscularly. Early in June of 1952 she began to fail and died on the 15th of the month of a chronic pneumonia secondary to the foot infection. It is believed she established a longevity record for Moose in captivity (October 17, 1942, to June 15, 1952).

A paper, "Available Antivenins for the Treatment of Snake-bite," under the joint authorship of James A. Oliver and Leonard J. Goss, appeared in the last issue of "Copeia" for 1952.

A new co-operative research project concerned with human arterio-sclerosis was instituted with Dr. Theodore D. Cohn of the Messinger Research Laboratories, Beth-El Hospital,

Brooklyn. Determinations are being made of the cholesterol and lipoproteins of the blood of turtles. A corollary study of blood calcium and phosphorus is also being made.

Dr. Charles P. Gandall, a 1951 graduate of the New York State Veterinary College at Cornell University, joined the Hospital staff as Assistant Veterinarian on January 1.

On May 8, Mrs. Martina Twigg assumed the duties of laboratory technician and Registered Nurse in charge of first aid. During the year the First Aid service handled 2,254 cases. The employees' blood bank provided eleven pints of blood for three employees or members of their immediate families.

Miss Nancy Roper, Hospital secretary for nine years, resigned in June at the time of her marriage.

The Veterinarian attended the following meetings:

American Veterinary Medical Association Convention.

Annual Conference for Veterinarians, Cornell University.

Regional Meeting of American Animal Hospital Association.

Annual Meeting of the American Association of Zoological Parks and Aquariums.

Papers and lectures were given before these groups:

Passaic, New Jersey, Rotary Club.

Men's Club of Central Presbyterian Church, New York City.

Annual Meeting of Veterinary Medical Association of New Jersey.

On May 16, Globe Photos, Inc., took pictures of our veterinary activities for a feature article in "People and Places," the publication of the DeSoto-Plymouth Automobile Dealers. The September 27, 1952, issue of "The New Yorker" carried a popular piece on the Animal Hospital and Laboratory.

Fifty specimens were dispatched to other research institutions with which we collaborated. An additional 59 specimens--22 mammals and 37 birds--went to the American Museum of Natural History.

Birds hospitalized during the year numbered 40 for 529 hospital days. One hundred and fifty-one mammals were accommodated for 3,729 hospital days.

The mortality tables following require some explanation. "Total in Collection" is arrived at by adding to the census at the beginning of the year all animals acquired by purchase, exchange, gift or born alive. Animals disposed of alive by sale or exchange during the year are not deducted. Contrary to the policy of some zoological gardens, no acclimatization period following birth or arrival is allowed.

# MORTALITY TABLES FOR 1952

## MAMMALS

<u>Year</u>	<u>Total in Collection</u>	<u>Died</u>	<u>Mortality Percentage</u>
1952	686	119	17.34
1951	691	104	15.05
1950	697	117	16.78
1949	721	115	15.95
1948	<u>660</u>	<u>95</u>	14.39
Totals	3455	550	

Average mortality for past 5 years: 15.91

Average mortality for past 16 years: 19.36

## BIRDS

<u>Year</u>	<u>Total in Collection</u>	<u>Died</u>	<u>Mortality Percentage</u>
1952	1586	279	17.59
1951	1617	250	15.46
1950	1816	283	15.58
1949	1645	248	15.07
1948	<u>1763</u>	<u>261</u>	14.80
Totals	8427	1321	

Average mortality for past 5 years: 15.67

Average mortality for past 16 years: 15.94



## ANIMAL BEHAVIOR

John V. Quaranta, Research Associate

RESEARCH IN ANIMAL BEHAVIOR, previously confined largely to the summer months, was placed on a year-'round although part-time basis at the beginning of 1952 with the appointment of Dr. John V. Quaranta as Research Associate in Animal Behavior.

While sharing his time with Manhattan College, where he is a member of the faculty in psychology, Dr. Quaranta was able to initiate a wide program of co-operation with other institutions, to prepare a proposal for long-term research for which a grant-in-aid will be sought and to carry to completion one major research project and to do preliminary work on another.

CO-OPERATION IN RESEARCH - The principle of engaging laboratories and institutions with allied interests in co-operative studies of animal behavior in the Zoological Park was established several years ago by Dr. C.R. Carpenter, Co-ordinator of Animal Behavior Research Programs for the Zoological Society, and has been fostered by Dr. J.P. Scott of the Jackson Memorial Laboratory of Bar Harbor, Maine, who has been consulted on certain phases of our work. Furthering that principle, discussions were held during the past year with the Rev. Franklin Ewing, S.J., Director of Research at Fordham University. Students in the biology and psychology departments of Manhattan College were given facilities for short-term behavior studies in the Zoological Park. Under the direction of Brother Cyprian James, F.S.C., chairman of the biology department of Manhattan College, two colonies of rats were established in the biology laboratories for pilot studies in animal behavior.

Dr. Anne Anastasi, Professor of Psychology at Fordham University, was given a small grant by the Zoological Society and the Jackson Memorial Laboratory for making statistical computations of learning data in dogs. The data were provided by Dr. Scott.

RESEARCH PROGRAM AND PROPOSAL - A request for funds that would permit the establishment of a full-time behavior research program in the Zoological Park and co-operating institutions was prepared by Dr. Quaranta after conferences with Drs. Carpenter and Scott. The request was submitted to the National

Institute of Mental Health of the Federal Security Agency at the end of the year.

SUMMER RESEARCH PROGRAM - Prof. Julian Melhado of Western College, Ohio, was appointed Summer Research Fellow. During the summer he investigated maze learning in lizards, complex learning in primates and social perception in ducks. Mr. Jay Bartels, a research consultant in the design of apparatus, drew preliminary plans for a behavior research building and designed apparatus for use in experimental work. Dr. William Etkin, Associate Professor of Zoology at the City College of New York, initiated observations on socialization in the Indian Blackbuck. Mr. John L. Hughes, research psychologist for the International Business Machines Corporation, prepared a manuscript on statistical methods in animal behavior research and assisted in the design of certain experiments.

EXPERIMENTAL WORK - Dr. Quaranta completed, late in the year, a series of tests on the color vision of the Galapagos Tortoise which had been started in 1949. He also began work on discrimination generalization in Macaques, White-handed Gibbons and human subjects.

DOCUMENTATION - The following were published by Dr. Quaranta:

Your Questions Give You Away. Animal Kingdom, Vol. 55, No. 1, pp. 26-27.

Animal Learning: An Ancient Speculation and a Modern Science. Animal Kingdom, Vol. 55, No. 2, pp. 56-59.

An Experimental Study of the Color Vision of the Giant Tortoise. Zoologica, Vol. 37, No. 21, pp. 295-312.

An Experimental Study of the Color Vision of the Giant Tortoise. (Read by title): American Psychological Association meeting, Washington, D.C., Sept. 2. (Abstract): Amer. Psychologist, July.

A Comparative Study of Discrimination Generalization in Macaque Monkeys, Macaca mulatta, White-handed Gibbon, Hylobates lar, and in Human Subjects. (Abstract): Anat. Rec., Vol. 113, No. 4, Abstract 114.

Two short motion picture records of experimental work conducted at the Zoological Park, on color vision in the Galapagos Tortoise and primate learning, were made by Staff Photographer Dunton under Dr. Quaranta's direction.

LECTURES - Dr. Quaranta gave talks on "Research in Animal Behavior" and "Color Vision Capacities of Animals" before the Mendelian Society of Manhattan College, and before a joint meeting of the Psychological and Philosophical Societies of Manhattan College on "Human Cognition and Animal Learning."

## DEPARTMENT OF EDUCATION

Herbert J. Knobloch, Assistant Curator  
Elizabeth P. Jacob, Assistant  
Mildred Levine, Assistant

A NECESSARILY LARGE and in some ways a disproportionate amount of the Department of Education's time in 1952 was concerned with the production of the Society's motion picture films. A routine has been evolved whereby the Department of Publication and Photography does the actual script-writing, shooting and soundtracking of motion picture films, and the Department of Education handles all the time-consuming tasks of splicing, matching, rehearsing and, eventually, distributing on a sales or rental basis.

At the year's end four or five pictures were completed, with sound track, and a decision will be made in 1953 whether we are to attempt national distribution ourselves or to turn over our existing pictures, and future ones as they are produced, to an established distributor. The former method will certainly entail a larger staff. In any event, experience of the past year has taught us that the preparation of six reels is certainly the limit of the Department of Education's present staff, involved as it is with so many other functions.

Our films were mailed out on 117 rental orders and were seen by 14,386 persons. Fourteen prints were sold. On 24 occasions films were loaned out for special showings, and there were 10 requests for previews. Staff officers used motion pictures 39 times to illustrate talks and lectures.

VISITING SCHOOLS AND ORGANIZATIONS - The number of school classes and groups visiting the Zoological Park set a new high record in 1952. The totals are:

Schools and Organizations	2,035
Classes and Organized Groups	2,905
Total School/Group Attendance	131,221

As usual, the month with the greatest number of school visitors was May, when 631 schools, 1,064 classes and 44,806 students visited the Park. All of these figures are also new highs for any one-month period to date.

GUIDED TOURS - A new record was also established in the guid-



ed tour service. During the year 151 guided tours were conducted for 4,081 persons. The previous record year was 1947 when 150 tours were given. Thirty-five tours were conducted for 1,240 students during the month of May alone, and, as might be expected, the figures are new records for any one month. The exceptionally fine weather during the fall undoubtedly contributed in large part to the particularly heavy schedule. Seventy-seven members of the Society and their guests took advantage of their membership privilege and were taken "behind-the-scenes" on 14 members' tours.

SCHOOL LECTURE SERVICE - Miss Jacob visited 87 schools and organizations and gave 291 animal-demonstration talks to 27,915 children. Her visits to the children's ward of Memorial Hospital, where the patients are cancer cases, were so greatly appreciated that the recreation department of the hospital has requested regular monthly programs.

LECTURES - Seventeen lectures, illustrated with animals and motion pictures, were given by staff members of the department to audiences totaling approximately 1,500 persons.

QUESTION HOUSE - Question House operated from Wednesday, April 30, through Sunday, November 9, and during the season was closed only 17 days because of bad weather. This service continued to be as popular as ever. Throughout the six and a half months of operation the staff answered 17,097 questions put by the 42,223 recorded visitors. A breakdown of the questions follows:

Miscellaneous animal questions .....	13,210
Questions requiring research .....	151
Platypus questions .....	568
Directional questions .....	<u>3,168</u>

17,097

In February a new Kodachrome view box was purchased for the display and sale of additional Kodachrome slides. Slides of animals in the Jackson Hole Wildlife Park region, photographed by James Simon, are now being sold in addition to those taken by Staff Photographer Dunton in the Park.

MISCELLANEOUS - Two more in-service courses for elementary school teachers, "Materials and Methods in the Use of the New York Zoological Park (Bronx Zoo) in Elementary Education," were given at the Park during the spring and fall school terms.

In the spring another 5-weeks training course in animal life was given for Girl Scout Leaders and in July two addi-

tional one-day sessions were held for groups of prospective Brownie Scout Leaders and Intermediate Girl Scout Leaders.

Toward the end of October, a survey was started in co-operation with the Bronxville school system to determine how best the Zoological Park may serve the public schools. A preliminary report was submitted at the end of the year and the survey will continue in 1953.

Miss Mildred Levine joined the staff of the department in February.

## SUMMARY OF ATTENDANCE

### ZOOLOGICAL PARK

<u>Month</u>	<u>1952</u>	<u>1951</u>
January .....	66,396	59,968
February .....	114,304	134,099
March .....	126,034	167,307
April .....	221,786	308,275
May .....	278,586	317,915
June .....	258,939	270,515
July .....	277,279	360,368
August .....	323,654	342,355
September .....	231,562	261,637
October .....	195,256	171,273
November .....	125,891	119,634
December .....	<u>51,295</u>	<u>70,125</u>
	2,270,982	2,583,471
Total visitors from		
November 9, 1899, to		
December 31, 1952 .....		114,338,375



## PUBLICATION AND PHOTOGRAPHY

William Bridges, Curator  
Dorothy Reville, Assistant  
Sam Dunton, Photographer

FOUR MOTION PICTURES in 16 mm. Kodachrome were produced in 1952 and a sound track was put on another film edited from existing footage--a total of accomplishment which speaks well for the industry of our Staff Photographer and the unstinted co-operation of members of the Education Department on whom we depend for matching of work print and original, splicing, rehearsal screenings and all the tiresome chores connected with film-making.

In April Mr. Bridges and Mr. Dunton flew to Trinidad and in three crowded weeks shot 2,600 feet of film on the activities of the Department of Tropical Research. This has been edited to two reels--800 feet--and is now awaiting completion with a sound track, after which it will be incorporated in our general film library.

The usual miscellany of Zoological Park events of the year was filmed at odd moments and resulted in a one-reel picture entitled "Herbert and His Friends." This footage will subsequently be broken up and the best of it used in other pictures.

In mid-summer, under the direction of Dr. Oliver, Mr. Dunton photographed "The Locomotion of Snakes," a one-reel picture for which we expect great success in biology class distribution.

The motion picture year ended on a somewhat frantic note when, in early November, it was determined that a motion picture should be made to further the Aquarium fund-raising campaign, with the first showing scheduled for the Zoological Society's Members' Meetings in mid-January. Some 8,000 feet of superb film was generously and promptly lent to us by Mr. Lee Boltin, Dr. C.M. Breder, Jr., Mr. Murl Deusing, Mr. Ben East, Mr. George G. Lower, Mrs. Margaret Lockhart and the Conservation Foundation. An artist, Mr. Carl Burger, went to work on a night-and-day basis, Mr. Dunton shot additional footage as required, the Education Department staff on several occasions worked all night long, and on the morning of Wednesday, January 14--the day of the first scheduled showing of the picture--Mr. Dunton was able to present his creation complete with narration and music sound track.

In the midst of this last-minute scramble time was found to put a sound track on "Strangers from Afar," a picture edited from existing footage.

The photographic collection now numbers approximately 30,000 negatives, including 587 made last year by Mr. Dunton. We sold 775 prints and made 1,936 prints, 42 copy negatives, 53 slides, 6 transparencies and 95 X-ray negatives for our own purposes.

In the Printshop Mr. Larsen performed an admirable job in handling the ever-increasing volume of work. He provided 240 new animal labels and our presses struck off 258,625 impressions in turning out forms required by various departments.

In the Publications section, "The Prevention and Treatment of Snakebite" was published as a 32-page pamphlet; "A Biological and Economic Appraisal of the Jackson Hole Elk Herd" was edited and published; and at the end of the year an Aquarium promotion booklet, written by Mr. Carlisle with captions prepared by Mr. Atz, was seen through the press.

Our technical quarterly, Zoologica, was given a new typographic dress at the beginning of the year. Twenty-one papers, to a total of 312 pages, were published. Volume 37 contained the following:

Part 1. June 30, 1952.

1. A New Dwarf Toad from Southeastern Brazil. By George S. Myers & Antenor Leitao de Carvalho.
2. Sexual Broods and the Production of Young Queens in Two Species of Army Ants. By T.C. Schneirla & Robert Zanes Brown. Plates I-III; Text-figures 1 & 2.
3. Spectral Effects on the Growth Rate and Endocrine Histology of the Teleost, Astyanax mexicanus. By Phyllis H. Cahn. Text-figures 1-4.
4. Fungus Associated with a Granuloma in a Turkish Fish, Aphanius chantrei Gaillard. By Recai Ermin. Plates I & II; Text-figures 1-11.
5. Deep-sea Fishes of the Bermuda Oceanographic Expeditions. Families Cetomimidae and Rondeletiidae. By Robert R. Harry. Plate I; Text-figures 1-4.

Part 2. September 19, 1952.

6. The Effects of Prolonged Treatment with Acriflavine on the Killifish, Fundulus heteroclitus (Linnaeus). By Grace E. Pickford.
7. Effects of ACTH and Cortisone on the Pituitary, Thyroid and Gonads of the Teleost Astynax mexicanus. By Priscilla Rasquin & Ethel Hafter Atz. Plates I & II; Text-figures 1 & 2.

8. The Effects of Holothurin on Fish, and Mice with Sarcoma 180. By Ross F. Nigrelli.
9. Sex Determination in Xiphophorus (Platypoecilus) maculatus. III. Differentiation of Gonads in Platyfish from Broods Having a Sex Ratio of Three Females to One Male. By Myron Gordon. Plates I & II; Text-figure 1.
10. Four New Species of Geometridae (Moths) from Rancho Grande, North-central Venezuela. By D.S. Fletcher. Plate I; Text-figures 1-7.

Part 3. October 31, 1952.

11. The Mutillidae (Wasps) of British Guiana. By Clarence E. Mickel.
12. A Revision of the Fishes of the Subfamily Alfarinae in the Family Poeciliidae. By Donn Eric Rosen. Text-figures 1-10.

Part 4. December 31, 1952.

13. Introduction to the Ecology of the Arima Valley, Trinidad, B.W.I. By William Beebe. Plates I-V; Text-figures 1-5.
14. Spontaneous Neoplasms in Fishes. VI. Thyroid Tumors in Marine Fishes. By Ross F. Nigrelli. Plates I-IX.
15. Further Comparisons of Length and Voltage in the Electric Eel, Electrophorus electricus (Linnaeus). By M. Vertner Brown & C.W. Coates. Text-figures 1-7.
16. A Contribution to the Life History of Colobura (Gynaecia auct.) dirce dirce (Linnaeus). (Butterfly). By William Beebe. Plates I & II.
17. The Saturnioidae (Moths) of Rancho Grande, North-central Venezuela. By Henry Fleming.
18. The Functional Morphology of the Egg-eating Adaptations in the Snake Genus Dasypeltis. By Carl Gans. Plates I-IV; Text-figures 1-15.
19. An Annotated List of the Mantids (Orthoptera, Mantoidea) of Trinidad, B.W.I. By William Beebe, Jocelyn Crane & Sally Hughes-Schrader. Plates I-VIII; Text-figures 1 & 2.
20. A Comparative Study of Innate Defensive Behavior in Trinidad Mantids (Orthoptera, Mantoidea). By Jocelyn Crane. Plates I-X; Text-figures 1 & 2.
21. An Experimental Study of the Color Vision of the Giant Tortoise. By John V. Quaranta. Plates I & II; Text-figures 1 & 2.

For the first time in our history, the Annual Report of the Zoological Society was published in two forms--a shortened, pictorial presentation made by Mr. Carlisle and the fa-

miliar detailed report of previous years. The latter, as an economy measure, was published in offset from typescript copy prepared during the spring by Miss Lucy Long of the Publications section.

Animal Kingdom, its typography and layout brightened by Mrs. Dorothy Reville, was published in the six regular numbers.



## COMPTROLLER'S DEPARTMENT

Herbert F. Schiemann, Comptroller

THE PRINCIPAL IMPROVEMENT in the Comptroller's Department during the past year was the installation of a modern payroll system effective January 1, 1952. The system's numerous advantages include improved organization of payroll work, greater control over payroll changes and expenditures and a time-saving feature, namely, a method of preparing three essential payroll records at the one writing. Through the installation of the system we were able to forestall an increase of office personnel which for a time appeared inevitable because of the additional work taken on by the Payroll Division, such as Group Insurance details. Group Insurance for employees, which also went into force on January 1, 1952, added considerably to our crowded work schedule.

During the past year there was employee turnover in the Comptroller's office to an unusual extent because of the resignations of several of our more experienced employees. The problems arising from this turnover have been met by our present personnel, who have devoted their time loyally and efficiently to the work in hand. For this we are most grateful.

## CONSTRUCTION AND MAINTENANCE

Quentin Melling Schubert, Superintendent

TWO MAJOR JOBS designed, constructed and supervised by Department of Parks engineers were undertaken in 1952 and will be ready for acceptance by this department early in 1953. The first of these, the Reptile House Roof, redesigned and constructed of steel and pre-cast slabs, was delayed three months because of the steel strike. The second project included a Parking Field accommodating 327 cars and a Comfort Station at Bronxdale. The imminent operation of the Casting Pool and the Farm-in-the-Zoo and plans for the future Conservation Exhibit made the new construction necessary.

Our own department designed and completed a number of projects, using some sub-contractors. A Wading Pool was constructed in the southeast Elephant Yard, the main Yard regraded and the entire area resurfaced with asphalt.

An air-conditioned cage was designed and built in the lobby of the Reptile House. This provides an exhibition space with a temperature of 55-60 degrees for the Tuatara. Another



air-conditioning unit was installed in the Hummingbird section of the Bird House and a third one in the Mail Room of the Administration Building.

A high-sided enclosure was constructed in the basement of the Heads and Horns Museum and equipped with banks of photo-flood lights for motion picture photography of reptiles and small mammals.

The bridge over the moat of the African Plains was reconstructed with steel beams and a new railing in keeping with the present design.

Four new tubular steel boilers were purchased and installed, the first in the Bird House, replacing the two small obsolete boilers; the second in the Service Building; the third in the Boston Road Comfort Station, and the fourth replacing the water heating boiler in the Hippopotamus pool.

Approximately 2,500 square yards of paving was done on walks where repairing was badly needed.

New window frames and sash were constructed in our shops to replace the rotted sash in the main windows of the Elephant House.

Large maps of the Zoological Park, framed and under glass, were set in twelve locations about the Park. They indicate the visitor's location in relationship to all exhibits.

In line with the color scheme inaugurated in 1950, the interior of the Ostrich House was repainted. Tables and chairs in the restaurants have also been painted in accordance with this plan.

The Yard Scale was reconditioned, with new deck planking.

Several offices in the Administration Building were reconditioned and redecorated.

Airkem machines were installed for deodorizing the Lion House and four are at present being tested in the Elephant House.

Considerable planting was necessary during the past year. A survey of dead trees indicated 232 trees of 6" caliper or larger and 219 under 6" caliper that must be removed. During the winter of 1951-52, 480 trees were removed, this large number being in part a result of the storm of 1950. A new large honey locust tree was planted in the southeast Elephant Yard where a 35" caliper dead white oak was removed. Hemlock, white birch and weeping willow trees have been planted in the area south of the Moose corral. In this same area another unit of rhododendrons has been planted, replacing the tall old plants broken down under winter ice and age.

In addition to the above, the departments executed 2,350 work orders during the year.

Institution of the forty-four hour work week in October and the forty-two hour work week on January 1, 1953, required a rescheduling of men in shops and maintenance. The full impact of the shorter work week has not yet been felt.

## FACILITIES DEPARTMENT

Edward Kearney, Manager of Restaurants  
Edward Quinn, Assistant Manager

IT IS ESTIMATED that 2,500,000 servings of either food, beverage or confection were consumed by Zoological Park visitors last year. Because of the enormous amount of nourishment sold and the necessity of purity and wholesomeness in the food served in our restaurants and refreshment stands, the Society five years ago instituted a restaurant employee training program in methods of preparing and dispensing food products.

In consequence of this program, six members of the supervisory personnel were given a course of training at the Food Trades Vocational High School under the sponsorship of the New York City Department of Health.

They were then assigned to supervision of general sanitation, food supplies, sanitary inspections and methods of storing, handling and processing food. It is most gratifying to report the high standard of operation maintained by the restaurant facilities since this program was inaugurated.

The new Cafeteria which opened for business late in 1951 has proved to be exceedingly popular. At times on busy Sundays it was necessary to station an attendant at the door to limit the number of patrons at a given time to prevent overcrowding. New colorful chairs and tables were added to the outside dining terrace and were sheltered with beach umbrellas. The Cafeteria is open every day in the year, and its revenue has exceeded expectations.

The Zoobar, our service restaurant which is closed during the winter, is being further modernized. Waitress locker facilities are being expanded and a concrete block structure is being added to the north side of the building to house new sanitary clothes lockers. The service kitchen floor, which was laid in 1941, is being replaced with sanitary grease-resistant tiles.

Because of the popular demand for such items as balloons, Bronx Zoo pennants, inflated rubber monkeys and numerous other zoo novelties, the souvenir department has again enjoyed a record year in sales. Quantity of some of the items sold are: Bronx Zoo pennants, 29,431; Bronx Zoo balloons, 42,690; squirt snakes, 3,792; chenille animals, 3,540; bear badges, 8,231; hopping frogs, 3,742; rubber monkeys, 9,412; Bronx Zoo parasols, 4,176; animal pinwheels, 7,847.

The Central Commissary with its multiple floor levels is handicapped for space to handle the enormous amount of food and beverages received and stored. Most items are repacked into smaller containers or packages and reshipped to the vari-

ous restaurants, service stands, souvenir stands and carretina wagons scattered throughout the Zoological Park.

Some idea of the volume of the refreshment business in the Zoological Park will be gained by Commissary statistics for 1952: 1,906 doz. eggs, 2,334 lbs. of butter, 3,322 lbs. cheese, 6,497 gal. ice cream, 34,156 doz. ice cream pops, 26,328 doz. frankfurter rolls, 34,685 lbs. frankfurters, 39,589 lbs. meat, 5,870 lbs. coffee, 22,250 cs. soda, 4,422 gal. fountain syrups, 41,430 doz. popcorn, 10,947 boxes candy, 165,600 individual containers of orangeade, 1,165,000 assorted single service paper cups, 166,000 paper plates.

## MISCELLANEOUS OPERATIONS

### AND SERVICES

CHILDREN'S ZOO - The Children's Zoo opened for its 12th season on April 12, under the able supervision of Mrs. Corrine Dalsgaard, and closed for the year on November 7. Despite the adverse rainy spring weather and the very hot dry summer, the attendance for 1952 totalled 354,862.

RIDING TRACKS - Dromedaries, Llamas, and Donkeys capably operated by Riding Master Henry Bartels gave rides to 202,409 children in 1952, a total exceeded only by last year's record-breaking 231,434 rides. Complete plans and drawings have been prepared for the reconstruction of the entire Riding Track area, together with new ticket stands and platforms. It is hoped to have this work completed by mid-1953.

Rides at the Pony Track under Ponymaster Edmond Foran numbered 181,617.

TRACTOR TRAINS - Rides numbered 479,936 in 1952.

FARM-IN-THE-ZOO - The Farm-in-the-Zoo was again unable to open because of Parkway construction. Farm Superintendent Nelson Miller remained in residence on the property. Basic breeding stock was maintained, and animals from the Children's Zoo were wintered and tractor trains stored at the Farm. Emphasis was placed on the production of eggs and poultry, and fresh eggs were supplied for custards for the Duck-billed Platypuses. Other foodstuffs were supplied to the Facilities Department Commissary.

Production at the Farm was: Wool, 150 pounds; Pork, 3,168 pounds; Lamb, 93 pounds; Poultry, 616 pounds; Eggs, 690-2/3 dozen.



## THE AQUARIUM

Christopher W. Coates, Curator and Aquarist  
James W. Atz, Assistant Curator  
Ross F. Nigrelli, Pathologist  
Myron Gordon, Geneticist

THE LAUNCHING of the drive for funds to build, equip and stock the proposed new Aquarium represents a new high point in our activities. Much of our attention and effort, during the latter part of the year, was focused on the preparation for the drive itself, on the brochure jointly issued by the Park Department and the Society, and on the Society's motion picture and booklet which describe the building and its collections and which were to be featured at the Members' Meeting of the Society held in January, 1953.

Since there are practically no commercial dealers in fishes, except those who sell small freshwater species suitable for home aquaria, the great majority of fishes and other aquatic animals cannot be purchased through commercial channels. The setting up of sources of supply is therefore one of the knottiest of problems faced by public aquariums. For the past few years Curator Coates has been establishing contacts throughout the world with an eye to stocking the new Aquarium. During 1952, trips were made to West Virginia and Florida with this view in mind--to West Virginia to meet the freshwater fisheries men of the various northern and eastern states, and to Florida to survey and establish connections, both commercial and institutional, for the catching and transportation of the colorful and interesting marine fishes of that area. It is good to be able to report that the prospects for obtaining a most varied and interesting collection seem excellent.

Because of the difficulty of obtaining a suitable material for framing our new labels, we have been delayed in placing them on view. For this purpose we needed a substance that was attractive in appearance, capable of resisting water, dirt and air-borne chemicals, structurally strong enough to preclude the use of massive and unsightly borders, difficult to destroy or damage--and yet easy to fabricate and not too expensive. Aluminum was finally decided upon, of a suitable degree of hardness and with a satin finish which we prepare ourselves. This eliminates objectionable points of reflection that would occur with highly polished surfaces. The



finish is protected by a coat of transparent lacquer. Most of the work on the frames has now been completed; we expect to put up the new labels early in 1953.

The collection and maintenance of earthworms, crayfish and frogs, used to feed the Duck-billed Platypuses, continued as one of our regular activities.

EXHIBITIONS - Although we are at present dependent upon the ordinary commercial shipments of small tropical fishes from northern South America and southeastern Asia for the great majority of our new fishes, we occasionally turn up rare and interesting local species suitable for exhibition in warm fresh waters. Such were the young albino Bullheads, Ameiurus nebulosus, presented to us by Dr. Alfred H. Schilling, who collected them at Kemah Lake, New Jersey. A young Chain Pickerel, Esox niger, also collected locally and donated to us, has done well in one of our tanks. From Lake Agassiz, at the time of its lowering last December, we obtained a series of wild Goldfish. These dull bronze or lead-colored fish are the descendants of golden-hued individuals that were accidentally or deliberately planted sometime in the past. Placed next to the tank containing our fine collection of fancy Goldfish, the new specimens provide a striking example of natural, as opposed to artificial, selection.

Among the more noteworthy tropical species purchased during the year have been a Mudspringer, an Arowana, several Upside Down Catfish, Pearl Spot Cichlids, Leaf-fish, Flying Barbs, Albino Pristellas and Spotted Callichthyids, Hoplosternum thoracatum.

In December we placed on exhibition a strain of domesticated Platyfish, called the Turkish Black Fury, first developed by Dr. Curt Kosswig of the University of Istanbul. These were the descendants of a single pair brought from Turkey by Dr. Gordon in the summer of 1950 and propagated in our Genetics Laboratory. These attractive fish are proving popular with tropical fish enthusiasts.

RESEARCH - Although the scientific investigations of the staff and their collaborators have proceeded along broad pathways previously set, several new approaches have been put into effect with gratifying results.

The application of newly developed ultramicrotechniques has enabled a team of investigators, operating from the College of Physicians and Surgeons and including Curator Coates, to analyze the functioning of the individual electric plates and even of single cells removed from the electric organ of the Electric Eel. Much information has been obtained about facilitation and inhibition, which are two of the basic phenomena underlying the physiology of nerve cells. The new techniques have already proved invaluable for determining

just what goes on at the cellular level when the eel discharges its powerful electric current. This knowledge will in turn provide new insight into the functioning of all nervous tissue, including that of man.

In searching for examples to support his presumption of the prevalence of antibiotics and other biological poisons among marine plants and animals, Dr. Nigrelli has unearthed an especially potent poison produced by a species of West Indian sea-cucumber. Not only does this substance, which has been named Holothurin, appear to be one of the most powerful animal poisons known, but its peculiar chemical properties have led to an investigation of its effects on certain types of cancer. Working with Dr. Nigrelli on the nature and properties of Holothurin is Dr. Paul A. Zahl of the Haskins Laboratories of New York. The material was collected by Dr. Nigrelli during a month's sojourn at the Lerner Marine Laboratory on the island of Bimini, British West Indies. While there, Dr. Nigrelli also tested the effects of newly developed helminthicides on fishes, and gathered new data on a naturally occurring fish tumor with an unusually high incidence.

With Dr. Sophie Jakowska of the College of Mount St. Vincent, Dr. Nigrelli has completed an investigation of the pathology of myxosporidiosis in Electric Eels. This disease is caused by highly infectious protozoans (one-celled animals) which may infest practically any organ of the body, producing extensive damage and death. Because these organisms belong to a group of parasites that occurs in many species of food fishes, undoubtedly killing large numbers of them and rendering the flesh of many others unfit to eat, anything that can be learned about their life history and how they affect fish has high potential value.

In support of this year's program of research on abnormal growths in fishes, carried on in our Genetics Laboratory at the American Museum of Natural History under the direction of Dr. Gordon, \$15,960 was received from the Federal Security Agency, Public Health Service, National Institutes of Health. From the American Cancer Society \$250 was received to aid in the work on thyroid tumors, and from the American Philosophical Society \$750 for evolutionary studies on fishes. The Damon Runyon Fund donated \$2,500 towards the publishing of a book composed of the papers given at the Third Conference on the Biology of Normal and Atypical Pigment Cell Growth, sponsored by the Society in 1951. Edited by Dr. Gordon, Pigment Cell Growth will appear in the spring of 1953.

In the Genetics Laboratory, Dr. Gordon and Mr. Theodor Marcus continued their investigations on a transplantable melanoma that occurs in certain hybrid swordtails. Because so few fish tumors can be successfully transplanted, this melanoma is of special interest. The development and physiology of the thyroid tumors that regularly appear in certain

strains of swordtail continue to be studied by Dr. Olga Aronowitz Berg, partly through the use of radioactive iodine.

Dr. Gordon made a three-weeks trip to the state of Tabasco in Mexico where he collected platyfish and swordtails in the Rio Grijalva. This was the last great river system in which these fishes were known to exist but from which no examples had ever been taken. Both living and preserved specimens were collected for genetic and speciation analyses. A study of the structure, function and evolution of the gonopodium of the male poeciliid fishes--the organ with which they fertilize the live-bearing females--was completed by Mr. Donn E. Rosen and Dr. Gordon. Three trips were taken to the Museum of Zoology of the University of Michigan in order to further the preparation of a book on the freshwater fishes of north-eastern Mexico by Professor Carl L. Hubbs and Dr. Gordon.

COLLABORATION - Our advice on the construction of new aquariums continues to be sought by institutions and authorities from many parts of the world. During the year we provided data for the construction and maintenance of new public aquariums in Wellington, New Zealand; Bergen, Norway; Paris, France; Maribor, Yugoslavia; Rio de Janeiro, Brazil; La Guaira, Venezuela; Montreal, Canada; Long Beach, California; Boston, Massachusetts; and Sault Sainte Marie, Michigan. Technical advice and assistance on water circulations for the maintenance of aquatic animals in captivity have been given to the Hokkaido Regional Fisheries Research Laboratory of Japan; the Marine Biological Laboratory of Cronulla, New South Wales, Australia; the Department of Zoology of the University of California at Los Angeles; the Belle Isle Aquarium of Detroit; the New Jersey Agricultural Experiment Station at Rutgers University; the Bingham Oceanographic Laboratory of Yale University; the New York State Medical School at Syracuse; and the New York Botanical Garden.

Much effort was given to the development of a method of moving living squid to the laboratories of the College of Physicians and Surgeons where these animals are required for the investigation of nerve activity, as part of the research program that includes the Electric Eel. The co-operation of Dr. Alfred Perlmutter, Marine Biologist of the State of New York, was invaluable in this project.

Collaborators working with the Aquarium during the year were:

Drs. David Nachmansohn, Harry Grundfest and Irwin B. Wilson, Department of Neurology, College of Physicians and Surgeons, Columbia University.

Dr. Mario Altamirano-Orrego, Catholic University of Chile, Santiago, and Department of Neurology, College of Physicians and Surgeons, Columbia University.



Dr. M. Vertner Brown, College of the City of New York.  
 Drs. Horace W. Stunkard and Harry Charipper, New York University.  
 Dr. Eli D. Goldsmith, New York University Dental College.  
 Dr. Aubrey Gorbman, Barnard College, Columbia University.  
 Dr. Sophie Jakowska, College of Mount St. Vincent, New York.  
 Drs. Caryl P. Haskins, Seymour Hutner, Paul A. Zahl and Luigi Provasoli, Haskins Laboratories, New York.  
 Dr. Alfred Perlmutter, Conservation Department, State of New York.  
 Dr. James R. Westman, New Jersey Agricultural Experiment Station, Rutgers University.  
 Dr. Carl L. Hubbs, Scripps Institution of Oceanography.  
 Dr. Recai Ermin, University of Istanbul.  
 Dr. Helen Vishniac, Queens College and Haskins Laboratories.  
 Miss Francesca LaMonte, Drs. Charles M. Breder, Jr., Lester R. Aronson, T.C. Schneirla and Eugenie Clark, American Museum of Natural History.  
 Dr. Daniel Merriman, Bingham Oceanographic Laboratory, Yale University.  
 Dr. Samuel Bieber, Wellcome Research Laboratories, Tuckahoe, New York.  
 Dr. Olga Berg, Fellow, American Cancer Society and Research Associate, Barnard College, Columbia University.  
 Mr. Hugh Gordon, Columbia University.  
 Dr. Abner I. Weisman, Jewish Memorial Hospital and Metropolitan Hospital, New York.  
 Dr. Alfred Angrist, Jewish Memorial Hospital and Queens General Hospital.

Drs. Nigrelli and Gordon presented their courses on fish diseases and the genetics of fishes, respectively, in the Graduate School of Arts and Sciences, New York University. Under the sponsorship of Dr. Nigrelli, Mr. Samuel Bieber received the degree of Doctor of Philosophy, and Sister Talitha-Meredith, O.P., received the degree of Master of Science. The following candidates are at present working under Drs. Nigrelli or Gordon for advanced degrees from New York University:

Mr. Sheldon Aaronson, Brooklyn College and College of the City of New York.  
 Mr. James W. Atz, New York Zoological Society.  
 Miss Jean Copperthwaite, Haskins Laboratories, New York.  
 Mrs. Sylvia Greenberg.  
 Miss Patricia Kadow, College of Saint Elizabeth, Morristown, New Jersey.  
 Mr. Thomas J. King, Institute for Cancer Research, Philadelphia.  
 Mr. Theodor R. Marcus, Sloan-Kettering Institute, New York.  
 Mr. George S. Pappas, Iona College, New Rochelle, New York.



Mr. Alfonso N. Petrocci, Onyx Oil and Chemical Company, Jersey City.

Mr. Alan A. Rubin.

Mr. Henry Vogel, New York City Department of Health.

Mr. Marvin Weinstein, Squibb Pharmaceutical Company, Inc.

Living fishes, most of them of special genetic strains, were supplied to the Universities of Paris, Vienna, Istanbul and North Carolina, to Oxford University, the College of France, the West Virginia University Medical School, the Rotterdam Zoo and a laboratory of the U.S. Fish and Wildlife Service located at Stanford University. Co-operation with the Department of Marine and Aviation, New York City; the Federal Security Agency, Pure Food and Drug Administration; the Department of Health, New York City; Fish and Wildlife Service, Department of the Interior; and the Conservation Department, State of New York, continued as in previous years.

PUBLICATIONS - The following scientific and popular articles by members of the staff appeared during the year:

Mr. Coates

The Marine Aquarium in the Home. Indian Aquarist (Bombay), Vol. 3, No. 2, pp. 8-9.

Introduction and Notes. Sounds of the Sea. Science Series, Folkways Records & Service Corp., New York. 5 pp.

Cod. Encyclopedia Americana, Vol. 7, pp. 192-193.

Electric Fishes. Encyclopedia Americana, Vol. 10, pp. 111-112.

Fluorescent Lights for Home Tanks. Fish Culturist, Vol. 31, No. 8, p. 57.

New Drugs and Their Use in the Aquarium. Indian Aquarist (Bombay), Vol. 3, No. 5, pp. 30-31. The Aquarium, Vol. 21, No. 10, p. 294.

Arowana Has Limited Ability to Survive. Fish Culturist, Vol. 32, No. 3, pp. 19-20.

Further Comparisons of Length and Voltage in the Electric Eel, Electrophorus electricus (Linnaeus). With M. Vertner Brown. Zoologica, Vol. 37, Part 4, pp. 191-197.

Activity of Electroplex of Electric Eel. With Mario Altamirano-Orrego, Harry Grundfest, David Nachmansohn and Irwin B. Wilson. Fed. Proc., Vol. 11, No. 1, p. 4. Abstract.

Weekly column on fishes in the New York World Telegram and Sun continued for twenty-second year.

Mr. Atz

The Functions of Plants in Aquaria. The Balanced Aquarium Myth. Pp. 123-134, 215-227 of "Tropical Fish as a Hobby." McGraw-Hill, New York.

- Fishes that Look Like Plants. Aquarium Journ., Vol. 23, No. 2, pp. 24-32.
- Functions of Water Plants in Aquaria. Aquarist and Pondkeeper, Vol. 16, No. 12, pp. 249-252.
- A Warning to Amateur "Fish Doctors." Animal Kingdom, Vol. 55, No. 2, pp. 45-46.
- Internal Nares in the Teleost, Astroscoptes. Anat. Rec., Vol. 113, No. 1, pp. 105-115.
- Beneficent Poison from the Sea? Animal Kingdom, Vol. 55, No. 6, pp. 175-177.
- Narial Breathing in Fishes and the Evolution of Internal Nares. Quart. Rev. Biol., Vol. 27, No. 4, pp. 366-377.

Dr. Nigrelli

- Virus and Tumors in Fishes. Ann. N.Y. Acad. Sci., Vol. 54, No. 6, pp. 1076-1092.
- The Effects of Holothurin on Fish, and Mice with Sarcoma 180. Zoologica, Vol. 37, Pt. 2, pp. 89-90.
- Spontaneous Neoplasms in Fishes. VI. Thyroid Tumors in Marine Fishes. Zoologica, Vol. 37, Pt. 4, pp. 185-189.
- Effects of Purine and Pyrimidine Analogues on Development of Rana pipiens. With Samuel Bieber and G.H. Hitchings. Proc. Soc. Exper. Biol. and Med., Vol. 79, No. 3, pp. 430-432.
- Further Studies on Atypical Blood Elements in Anemic Newts, Triturus viridescens. With Sophie Jakowska. Caryologia (Pisa), Vol. 4, No. 2, pp. 281-288.
- Don't Be a Hypochondriac about your Fishes. With James W. Atz. Aquarium Journ., Vol. 23, No. 10, pp. 201-205.
- Some Biological Characteristics of Holothurin. With Paul A. Zahl. Proc. Soc. Exper. Biol. and Med., Vol. 81, No. 2, pp. 379-380.
- Spontaneous Neoplasms in Fishes. VI. Thyroid Tumors in Marine Fishes. Cancer Res., Vol. 12, No. 4, p. 286. Abstract.
- Studies on Neoplasms in Fishes. VII. Spermatocytoma in an African Lungfish (Protopterus annectens). With Sophie Jakowska. Cancer Res., Vol. 12, No. 4, p. 286. Abstract.

Dr. Gordon

- Genetic and Correlated Studies of Normal and Atypical Pigment Cell Growth. Growth, Vol. 15, Supplement, pp. 153-219. (1951).
- How Animals Get their Names. Science Digest, Vol. 31, No. 1, pp. 18-22.
- How Fish Get Their Names. Aquarium Genetics. Pp. 177-214 of "Tropical Fish as a Hobby." McGraw-Hill, New York.
- Sex Determination in Xiphophorus (Platyopocilus) maculatus. III. Differentiation of Gonads in Platyfish from Broods Having a Sex Ratio of Three Females to One Male. Zoologica, Vol. 37, Pt. 2, pp. 91-100.

- Little Fish with a Big Future. Animal Kingdom, Vol. 55, No. 5, pp. 146-150, 166-167.
- Inheritance in Aquarium Fishes. Parts 1-3. Aquarist and Pondkeeper, Vol. 17, Nos. 7-9, pp. 134-138, 165-169, 186-190.
- Inheritance in Fishes. Parts 1-2. Aquarium Journ., Vol. 23, Nos. 11-12, pp. 219-223, 247-251.
- The Turkish Black Fury. Animal Kingdom, Vol. 55, No. 6, pp. 187-188.
- Genetic Evidence for Two Opposite Mechanisms for Sex-determination, XX-XY and WZ-ZZ (or WY-YY), in the Same Species of Platyfish, Xiphophorus (Platypoecilus) maculatus, from Different Geographical Populations. Anat. Rec., Vol. 113, No. 4, pp. 31-32. Abstract.
- Progressive Growth Stages in the Development of Spontaneous Thyroid Tumors in the Swordtail Xiphophorus montezumae. With Olga Aronowitz and Martha Edgar. Cancer Res., Vol. 12, No. 4, p. 245. Abstract.
- Study of the Regeneration Processes in Fishes after Amputations of Dorsal Fins with and without Melanotic Tumors. With Recai Ermin. Cancer Res., Vol. 12, No. 4, pp. 260-261. Abstract.
- The Frequencies of Five Genes for Macromelanophores (Cells Capable of Producing Tumors) in Seven Natural Populations of the Platyfish, Xiphophorus (Platypoecilus) maculatus. With Hugh Gordon. Genetics, Vol. 37, No. 5, p. 586. Abstract.

Mr. Rosen

- A Revision of the Fishes of the Subfamily Alfarinae in the Family Poeciliidae. Zoologica, Vol. 37, Pt. 3, pp. 151-156.

**PERSONNEL** - Mr. Coates was reappointed Chairman of the Committee on Aquariums of the American Association of Zoological Parks and Aquariums. Dr. Nigrelli represented the Society of Protozoologists on the A.A.A.S. Council and was elected a Fellow of the latter organization. Dr. Gordon was appointed Adjunct Associate Professor at New York University and was elected member of the New York Cancer Society and the Society for the Study of Development and Growth.

Mr. Frank Fitzgerald was retired at the middle of the year after twenty-five years of service. Mr. Thomas Howley, Secretary of the Zoological Park's Safety Committee, attended the Twenty-second Annual Convention of the New York Safety Council held at the Hotel Statler in April.

During July and August four trips were made to Prospect Park Lake where 1,240 fishes of ten different species were seined and tagged for the Abraham & Straus Junior Fishing Contest. Of the fishes tagged, 135 were recaptured by contestants, for which they received various prizes.

Members of the staff gave papers, lectures and demonstrations, and participated in discussions at the following institutions and places:

Second National Cancer Conference, Cincinnati.

American Association for Cancer Research, New York meeting.

Federation of American Societies for Experimental Biology, New York meeting.

American Society of Zoologists, Ithaca meeting.

Genetics Society of America, Ithaca meeting.

American Fisheries Society, Northeast Sections meeting, Weston, West Virginia.

Atlantic Fisheries Biologists, Kenyon, Rhode Island, meeting.

American Association of Zoological Parks and Aquariums, Montreal meeting.

Sixth Annual Symposium on Fundamental Cancer Research, M.D. Anderson Hospital for Cancer Research, Houston, Texas.

Memorial Cancer Center, New York.

Inter-Science Council, College of the City of New York.

Society of Biology and Medicine, Brooklyn College.

Department of Zoology, University of California, Berkeley, California.

Department of Biology, Hofstra College.

Systematics Club, American Museum of Natural History.

The Tropical Fish Fanciers of New England, Springfield, Massachusetts.

Houston Aquarium Society.

New Jersey Aquarium Society.

Bronx Rotary Club.

West Hudson Optimist Club.

West Hudson Kiwanis Club.

Television Stations WJZ-TV and WCBS-TV.



## DEPARTMENT OF TROPICAL RESEARCH

William Beebe, Director (January 1 to July 29, 1952)  
Jocelyn Crane, Research Zoologist; Assistant Director  
(since July 30, 1952)

Henry Fleming, Entomologist  
Ellen Ordway, Field Assistant

**GENERAL ACTIVITIES OF THE YEAR** - In the year 1952, the first five and a half months were spent in Trinidad on the 50th Expedition of the Department. In April a reconnaissance trip was made to Surinam, and in June and July Miss Crane made a three-weeks' trip to Panama and Guatemala. The rest of the year was spent in the laboratory in the Zoological Park, working up the results of the field investigations and preparing for another expedition.

This report includes only ten and a half months, as the new 51st Expedition began on November 14.

**CHANGES IN STAFF** - On July 29, after fifty-three years' service in the Zoological Society, Dr. Beebe was retired with the title of Director Emeritus. He "will actively continue research projects in the tropical valley of Arima, in Trinidad, at the Department's field station at 'Simla,' for the establishment of which he is, in fact, responsible, at the same time spending a considerable part of each year at his laboratory in the Zoological Park."

Miss Crane was made Assistant Director of the Department, with which she has been associated since 1930.

On September 1, Field Assistant Ellen Ordway left to study for a higher degree at Cornell. Miss Rosemary Kenedy has since joined the staff as Field Assistant and Photographer.

**FIFTIETH EXPEDITION** - The third year of occupancy of Simla came up to our expectations and re-emphasized the wisdom of selecting this locality. We left New York on the Alcoa-Pilgrim on January 14 and returned by Pan-American plane on June 26. On the seventeen days of the southern leg of the trip we made stops at Bermuda, the Virgin Islands, and on to Venezuela, docking at La Guaira, Guanta, Puerto la Cruz and Caripito, before reaching our destination, Port-of-Spain.

**HOUSEHOLD ARRANGEMENTS** - Neither the menage nor the laboratory required any changes. This third season found them

perfectly adapted for use. The removal of a primary wall turned a surplus bedroom into laboratory area, increasing the main floor area to a total of 304 square yards. A new overseer was installed at Simla, a reliable French Trinidadian.

GIFTS AND LOANS - For the second year, from the United States Weather Bureau we received the loan of a unique Sunshine Recorder and a Hygro-thermograph, providing continued meteorological data for our ecological report. Again we express our hearty thanks to the Alcoa Steamship Company for generous support in transportation of personnel and luggage, and adequate care of delicate scientific instruments. Mr. Samuel Ordway made the invaluable gift of a Plymouth station wagon. Mrs. Busch Greenough provided for the construction of a generator house, and Mr. Curt Reisinger gave a powerful 5,000-watt Kohler generator with automatic starter.

ZOOLOGICAL PARK - Certain living animals were sent north to the Zoological Park, collected by members of the staff and by Edwin McConkey. They included a six-inch Peripatus (Peripatus sp.?) and 2 Mouse Opossums (Marmosa mitis chapmani); 13 snakes as follows: Boa Constrictor (Boa c. constrictor), Brown Tree Boa (Corallus enydris cooki), Anaconda (Eunectes murinus gigas), Tiger Snake (Drymarchon corais corais), Whip Snake (Thalerophis richardi coeruleodorsus), Brown Tree Snake (Oxybelis a. aeneus), Large-headed Snake (Imantodes c. cenchoa), Pink-bellied Snake (Leimadophis melanotus) and Ferdelance (Bothrops a. atrox); 2 Lizards, a House Gecko (Thecadactylus rapicaudus) and a Tegu (Tupinambis nigropunctatus); 129 frogs and toads, Marine Toad (Bufo marinus), Yellow-throated Marsupial Frog (Eupemphix pustulosus trinitatis), Green-backed Hyla (Phyllomedusa burmeisteri), Gough's Hyla (Hyla goughi), Minute Hyla (Hyla minuta), Small Blue-green Hyla (Hyla punctata), Lined Hyla (Hyla rubra) and Paradox Frog (Pseudis paradoxa).

The ten-year-old Lost in the Jungle exhibit in the Heads and Horns building in the Zoological Park still attracts a large number of visitors. As has been customary throughout most of the past thirty years, Dr. Beebe gave a brief address at the Annual Meeting of the Society, illustrated by a further series of Miss Crane's color motion pictures of tropical wild life. As exhibits there was shown a collection of several hundred of the more striking butterflies and moths of Simla.

RELATION WITH INSTITUTIONS - The Trinidad British Colonial Government and our American Naval Base again co-operated cordially, and we held the usual seminars for students from the Imperial College. New relations have been established with

the British Museum (Natural History). We are sending collections of Geometridae, Cerambicidae, Diptera and other insects to the foremost authorities in that institution, and are receiving identifications and papers for publication in Zoologica.

Three important gifts of fish collections were made by the Department to three American institutions. Several thousand deepsea Pacific fish were sent to Stanford University together with a collection of several hundred specimens cleared by the potassium hydroxide method.

A collection of West Coast shore fish was presented to the American Museum of Natural History. A collection of 14,500 fish and invertebrates collected by the Department around Bermuda went to the United States National Museum. It is a source of satisfaction that these collections of the Department have gone to institutions which are actively interested in studying deepsea and shore fishes.

The mantid collections, which form the bases for two papers already published in Zoologica, were divided between the United States National Museum and the Philadelphia Academy of Sciences, in return for the co-operation in systematic problems of their staff members, Dr. Robert Gurney and Dr. J.A.G. Rehn respectively.

Point Four assistance to European scientists, which was instituted by Mr. Fairfield Osborn and developed by Dr. Ross Nigrelli, had its initial idea in the report made by Miss Jocelyn Crane upon her visit to five European countries last year. The undertaking has amply justified its impetus.

CONSERVATION - Consultations with the Trinidad departments concerned with forests, fish and game have helped in attaining several important results. Attempts have been frustrated at wholesale seining of streams for tropical fish, and their transportation by plane for commercial purposes, and also the shooting and skinning of birds by paid collectors. Restrictions upon trapping birds and shooting out of season have been strengthened, and help in these respects has been rendered by the police. One favorable development has been the increase in price of shotgun shells, from 90 cents to \$5.25 a box.

TRIPS - Ten trips to caves were made by Henry Fleming and Ellen Ordway, some to Aripo and others to the Guacharo Caves. Among other creatures collected were several so-called "Luminous" Lizards. General results have yet to be reported upon. Other insular trips were made to Manzanillo Beach and to Pseudis Pond.

Extra-insular expeditions included a week in Surinam, a reconnaissance of Moengo, the site of Alcoa's bauxite mines, to explore possibilities of future work. Miss Crane spent



several weeks en route home, in Panama and Guatemala, carrying on further studies of fiddler crabs.

WEATHER - In strong contrast with last year's record rainfall, the year of 1952 was one of record drought. The total precipitation was 72.23 as compared with 117.4 inches. The effect upon flora and fauna is discussed in ecological studies. Our water supply was reduced to a mere trickle, but even this was sufficient to supply our basic needs, thanks to our having enlarged the storage tanks during previous seasons.

CONSTRUCTION - The major new installations were a commodious generator house, capable of housing three generators and to serve as a general tool room; the installation of a new and powerful generator; and the providing of an adequate carpenter shop and a garage to house our two cars. All of this construction was done under the supervision of Henry Fleming.

VISITORS AND INVESTIGATORS - We had an unusually large number of interesting and interested visitors. Among them we may mention His Excellency the Governor Sir Hubert and Lady Rance, Major Senior-White and Dr. Littlepage, Lady O'Reilly, Consul General Hale, Mr. Lamb, head of the Forestry Division, Dr. Marston Bates and Dr. Hill of the Rockefeller Foundation, Edward Collins, Thornton Burgess, Mr. and Mrs. Sherman Haight, Captain and Mrs. William Deems, Commanding the Naval Base, Mr. A.T. Shill of H.M. Customs and Senor and Senora Armando Planchart.

Our prize visitors were William Bridges and Sam Dunton of the Zoological Society who spent three weeks at Simla, making a motion picture record of the field activities of the staff, for showing at the Annual Meeting of the Society. It was both hard work and good fun and they were highly pleased with the results.

Mr. Edwin McConkey, a former pupil of Dr. James Oliver, was devoting a year of residence in Trinidad to the collecting and study of amphibians and reptiles. He spent a week with us at Simla, helping materially with our ecological survey, besides carrying on his own work. He also gathered living frogs, lizards and snakes which were shipped to our Zoological Park.

Among visiting investigators were Dr. and Mrs. Franz Schrader of the Department of Genetics, Columbia University. Mrs. Schrader pooled her ecological mantid data with ours, to join Beebe and Crane as co-author of one of the papers recently published in Zoologica.

SCIENTIFIC ACTIVITIES - During the year the scientific activities of the staff took on the appearance of the integrat-



ed whole which has been planned since the inception of the Trinidad Station. As always, our major aims have been to study the endless adaptations of successful living among animals, and to understand their relations with one another.

A fundamental investigation, which was shared by all members of the staff, was the carrying to completion of the ecological survey of the Arima Valley and its life. This included data on its physical geography, rainfall, humidity, temperature, sunshine, wind, biotic zones, general botany and zoology, as well as lists of all the vertebrates so far recorded from the research area. All of these have important influences on the presence and abundance and habits of animal life. These basic data are of constant use to us in our studies, and will be equally so to future investigators. This is especially true of the recording of phenological facts, which include the flowering seasons of trees and other plants and the breeding cycles of birds.

The first report from the Station on a particular group of animals, the mantids, formed another finished contribution. This, in turn, served as a necessary foundation for a comparative study of defensive behavior in mantids, which was completed simultaneously. The peculiar behavior of a caterpillar, Colobura, in protecting itself from enemies, is the subject of another paper. The latter is one of a series of comparative studies of innate, adaptive behavior in newly hatched insects.

These four first contributions from the Simla Station (Contribution Nos. 927, 928, 930 and 931) were readied for Zoologica in New York during the summer and autumn and were published at the year's end.

Trinidad studies which are under way include reports on the day-flying moths, with special reference to their butterfly-like habits; flocking and reproductive behavior in certain birds; color discrimination in butterflies and primitive bees; the role of visible color and the ultraviolet in the feeding and courting of various insects; and social behavior in butterflies. Also in preparation is a handbook to the birds of Trinidad.

Collections and observations made at Kartabo, British Guiana, and at Rancho Grande, Venezuela, are still being studied by the staff and by specialists connected with other institutions. There have been also published this year two papers on fish; one dealing with our Bermuda deepsea expeditions, and the other on Pacific shore fish taken on the "Zaca" expeditions.

PUBLICATIONS - Twenty contributions, directly from or related to the Department, were published in 1952. Of these, eight appeared in Animal Kingdom, and an equal number in Zoologica.

# CONTRIBUTIONS - 1952

- 912-Annual Report of the Department of Tropical Research for 1951. William Beebe. Pp. 47-52.
- 913-Bridge to Nature. Report to Members of the New York Zoological Society for 1951, p. 16.
- 914-Scarlet, Blue, Purple, Gold; Review of Flowering Trees. William Beebe. Tribune Book Magazine, 1951.
- 915-Grand Tour - Zoological Style. Jocelyn Crane. Animal Kingdom. Vol. 55, No. 1, pp. 2-9.
- 916-My Pocket Pet. William Beebe. This Week Magazine. Jan. 13.
- 917-Individuals All: A First Report from Expedition No. 50. William Beebe. Animal Kingdom, Vol. 55, No. 2, pp. 34-37.
- 918-Deep-sea Fishes of the Bermuda Oceanographic Expeditions. Families Cetomimidae and Rondeletiidae. Robert R. Harry. Zoologica, Vol. 37, No. 5, pp. 55-72.
- 919-Out of This World: Simla in Pictures. William Bridges. Animal Kingdom, Vol. 55, No. 3, pp. 84-87.
- 920-Four New Species of Geometridae (Moths) from Rancho Grande, North-central Venezuela. D.S. Fletcher. Zoologica, Vol. 37, No. 10, pp. 101-104.
- 921-Contribution to the Classification of Blennoid Fishes of the Family Clinidae. Clark Hubbs. Stanford Ichthyological Bulletin, 4 (2), pp. 41-165 (in part).
- 922-River Trip, with Orchids and a Caterpillar. William Beebe. Animal Kingdom. Vol. 55, No. 4, pp. 114-118.
- 923-Paradox Pond Revisited. William Bridges. Animal Kingdom, Vol. 55, No. 4, pp. 127-130.
- 924-An Announcement to Our Members. Fairfield Osborn. Animal Kingdom, Vol. 55, No. 4, pp. 6-7.
- 925-The Turquoise Tapir of Totonicapan. Jocelyn Crane. Animal Kingdom. Vol. 55, No. 5, pp. 138-145.
- 926-The Mutillidae (Wasps) of British Guiana. Clarence E. Mickel. Zoologica, Vol. 37, No. 11, pp. 105-150.
- 927-Introduction to the Ecology of the Arima Valley, Trinidad, B.W.I. William Beebe. Zoologica, Vol. 37, No. 13, pp. 157-183.
- 928-A Contribution to the Life History of Colobura (Gynaecia auct.) dirce dirce (Linnaeus). (Butterfly). William Beebe. Zoologica, Vol. 37, No. 16, pp. 199-202.
- 929-The Saturnioidae (Moths) of Rancho Grande, North-central Venezuela. Henry Fleming. Zoologica, Vol. 37, No. 17, pp. 203-207.
- 930-An Annotated List of the Mantids (Orthoptera, Mantoidea) of Trinidad, B.W.I. William Beebe, Jocelyn Crane & Sally Hughes-Schrader. Zoologica, Vol. 37, No. 19, pp. 245-258.
- 931-A Comparative Study of Innate Defensive Behavior in Trinidad Mantids (Orthoptera, Mantoidea). Jocelyn Crane. Zoologica, Vol. 37, No. 20, pp. 259-293.

## MEMBERSHIP

Donald T. Carlisle, Chairman  
Membership Committee

DURING 1952 Society membership totals were apparently stabilized, and the year ended with a slight gain over the preceding one--there being 3,115 members of record of all classes on December 31. Annual memberships showed a slight decline while Contributing members increased to the number of 659. The addition of 285 new Annual memberships during the year was not sufficient to offset losses, although a good part of the decline was due to shifts from Annual to Contributing status--a most gratifying trend. Over 25% of our total dues-paying members are now in the Contributing category, and the result of these shifts is reflected in the total dues collections for the year of over \$44,000, the highest total in the Society's history.

In our report for 1951 it was stated that a minimum gain of 400 new members would appear to be necessary in order to offset natural losses from deaths and resignations. This calculation was fairly justified by the results for the year, during which we gained a total of 448, including new Life members, slightly more than enough to give us a small gain for 1952.

As always, the best source of new members is old ones, and names of prospects sent in by the membership continue to constitute our best prospect list. We cannot urge too strongly that members not only send us such names, but that they also endeavor to bring in new memberships themselves independently of the Membership Office. With the supremely interesting program for the new year it should be easier than ever to get us new members.

The fact is constantly being brought to our attention that many of our members allow their memberships to lapse without knowing that this has happened. These accidents occur in spite of our system of informing members a month in advance that their dues are payable. We also allow three months of "grace" after expiration, sending a series of monthly letters to all dues delinquents. We keep all names of former members on file, and send them promotional material when issued, and it is interesting to note the number of former friends who wish to be reinstated. It would help us all and save the Society both time and expense if our members would not allow their memberships to lapse.

An active membership is essential to our continued progress, and every friend can help by keeping up his own membership as well as by sending us new prospects.



# SUMMARY OF MEMBERSHIP

Benefactors .....	7
Founders in Perpetuity .....	13
Founders .....	14
Associate Founders .....	6
Patrons .....	27
Life Members .....	382
Contributing Members .....	659
Annual Members .....	1,908
Honorary Members .....	2
Fellows .....	85
Research Associates .....	2
Corresponding Members .....	<u>10</u>
Total .....	3,115

Corrected to January 1, 1953



## THE CONSERVATION FOUNDATION

THE SOCIETY'S AFFILIATE, the Conservation Foundation, will be celebrating a fifth birthday in the spring of 1953, and members who are interested in the progress of this organization are urged to write headquarters at 30 East 40th Street for copies of the Foundation's report for the year 1952. This publication will be available at an early date.

January, 1952, found a majority of the Foundation's staff at work on the analysis of the six-year Alaska development plan, a project which we undertook as consultants for the United States Department of the Interior. Racing against a February 1 deadline, the team organized and directed by Executive Vice-president Samuel H. Ordway, Jr., came through on schedule and the report was in Washington on time. This report has not yet been made available to those outside the Government offices.

The program of the Research Department of the Foundation went forward on a wide range of projects in all areas of the renewable resources field. Perhaps the best appraisal of the Department's activities is contained in its own report issued in the fall of 1952, and quoted below:

Our research deals with many different aspects of the development and use of renewable resources--soils, water, forests and plant life, animal life. Research programs in marine resources are also now being outlined formally. One major aspect deserving special mention is research in the relation of population to resources. A brief summary of the Foundation's research studies, by resource and by approach, follows.

SOILS - Survey of Soil Erosion in the Western Hemisphere, in collaboration with the Food and Agriculture Organization of the United Nations. The Survey will be used to promote soil-conservation programs by governments in countries where the situation is serious and the need for measures not sufficiently realized. To be completed in 1953.

WATER - Projects completed or planned cover major aspects of water availability (as ground water), water control on the land, conversion of salt water to fresh, and industrial water needs and use.

The present ground-water situation in the U.S. was summarized in 1950-51, and presented with recommendations for future development and research in 'The Conservation of Ground Water,' now in use as a university text.

The role of vegetation in watershed management, and its relation to flood and sediment control and to water supply, is surveyed in a publication to appear in 1953. This study appraises present concepts and experimental work to date, and outlines further research needs.

An analysis of national flood-control policies and of the present programs of governmental agencies in this field is being actively planned. It is hoped this study will contribute to progress in unified river-basin planning by clarifying present issues. To be initiated in 1953.

A technical evaluation of the possibility of converting salt water to fresh on a large scale at low cost is now being completed. A report will be released in 1953.

A survey of water use in industry was made in 1950 in collaboration with the National Association of Manufacturers.

In the pulp and paper industry, a large water user, we are now working with its Technical Association on a more detailed study of water use and conservation possibilities. If worthwhile, we intend to promote further studies along similar lines by other industries.

**FOREST AND PLANT LIFE** - A review of U.S. Forest Resources was completed in 1952, and published under the title 'Forests for the Future' as a supplement to the December issue of American Forests, the magazine of the American Forestry Association. Its purpose is to draw a balanced picture of the current status and trends of the national timber supply in relation to present and future requirements.

**WILDLIFE** - Field work in Alaska has recently been completed by Frank Darling and A. Starker Leopold on certain wildlife and related problems, primarily regarding the long-range effects of environmental changes on the caribou and moose populations of the Territory. Both a technical report and a book for the general public will be issued in 1953.

**MARINE RESOURCES** - A preliminary study to define areas of long-term research in the development and use of

marine resources will be completed in 1953. This study is designed to guide the Foundation in sponsoring projects that would promote the wider use of these resources for human needs.

RESOURCE ADMINISTRATION - Statutory and legislative barriers to conservation practice describes a research project finished in 1951 at the School of Law, University of Pittsburgh. This is a study of the laws, administrative structures and procedures of the Commonwealth of Pennsylvania related to the management of renewable resources, and has in view the formulation of general principles and practices which will be most effective in this field. A model state law will be drafted. The entire study will be published sometime in 1953.

A seminar in the Economics of Land Use, established in 1950 at the Harvard School of Public Administration through the Foundation's aid, is analyzing the obstacles preventing the application of proved conservation practices and techniques on the land. This is a co-operative study by economists, political scientists and sociologists with the participation of Littauer Fellows recruited from government technical conservation agencies. A publication is planned.

The Foundation has served as consultant to a community watershed association organized two years ago in Princeton, New Jersey, in order to learn how similar associations may be promoted elsewhere.

POPULATION IN RELATION TO RESOURCES - An important facet of population study or demography is the assessment of population trends in relation to the availability of natural resources. We have undertaken a broad investigation of that relationship in order to identify areas of opportunity for research and action programs in this field. Numerous social, economic and cultural factors which vitally affect both population growth and the development and use of resources will be evaluated. We shall give special attention to the social barriers which hinder the attainment of a proper balance between population and resources, and to ways of overcoming them. Considerable emphasis is currently being placed on outlining means of marshalling scientific effort in fertility control.

IN THE FIELD OF EDUCATION - In June, 1952, the Ford Foundation asked the Conservation Foundation staff to make a study



of conservation education, preliminary to a conference to be held at Purdue University in September--the first such convocation ever to be held on this subject. The purpose of this preliminary survey was to determine existing gaps and needs and to suggest criteria and possible projects. Some fifty individuals--teachers, educational administrators, government officials and representatives of private conservation organizations--were called upon for papers contributing their viewpoints on conservation education needs. Some sixty-eight educational specialists from twenty-six states gathered at Purdue for this meeting of the National Committee on Policies in Conservation Education, and the fifty papers gathered by the Conservation Foundation were circulated in advance so that the conferees were able to proceed at once with their discussion of the points raised. It is planned to publish the bulk of these papers at an early date, making them available to everyone interested in the work of getting public acceptance of the conservation idea.

The Yale Conservation Project under Dr. Paul Sears will complete its third year in June, 1953. The Foundation's commitment in support of this program ends then but the University will continue the program with its own resources. In the autumn of 1952 the Ford Foundation took over financial support for the continuance of the seminar at the Harvard School of Public Administration, funds for which had formerly been made available through the Conservation Foundation. Both the Yale and Harvard experiences indicate the value of the Conservation Foundation as a catalyst, initiating such projects, arranging their preliminary support and seeing them through to permanent acceptance by the institutions involved.

With the completion of the "Living Water" series, the original four-year motion picture program of the Foundation's Visual-Aid Department was concluded. This last of the four educational films is in two reels, the first having to do with water and its cycle in the state of nature, the second dealing with what happens to this resource as a result of man's carelessness. The distributor of these four sets of films, "The Living Earth," "The Living Forest," the "Web of Life" and the "Living Water," together with "Yours is the Land," is Encyclopaedia Britannica Films, Inc. In a recent letter to President Osborn, E.B.F. made the following comment regarding these productions:

"Since your Living Earth Series has been released, more prints from them have been actually purchased by schools and adult groups than from any other comparable series that has ever been released." Speaking of the first three series they continue: "They are now in use in the schools of all the major cities in the United States... According to our most conservative estimates, the annual audience which sees and



studies these films will exceed two million people. It is difficult to imagine the tremendous impact which this superb series of films has upon American education unless one realizes that a new audience of this size for these films flows through our schools each year."

THE JACKSON HOLE WILDLIFE PARK  
and the  
JACKSON HOLE RESEARCH STATION  
of the  
NEW YORK ZOOLOGICAL SOCIETY

James R. Simon, Director

AT THE 1952 ANNUAL MEETING of the Jackson Hole Wildlife Park Board of Directors in August it was decided to convey the Jackson Hole Wildlife Park to the National Park Service. For several years the whole area has been within the National Park as a result of the transfer of lands in extending the boundaries of Grand Teton National Park. In addition to buildings, including the Information Center and the residence area, and the animals and equipment required for operation of the Wildlife Park, a cash sum was provided from Wildlife Park funds for National Park Service operation and maintenance until July of 1953 when Federal appropriations will be available. Since August the details of the transfer have been worked out and the Jackson Hole Wildlife Park, a Wyoming corporation, was dissolved as of December 18, 1952.

It was with considerable satisfaction that the Board was able to turn over to the Park Service a successful operation, with a completely accident-free record, which had in a six-year period proved itself of great interest to the traveling public of America. It is believed that the purposes in establishing the Wildlife Park have been fulfilled--creating a greater and more lasting interest in wildlife specifically, and conservation generally, and it is hoped the National Park Service will keep these aims in mind in future activities there. Quite likely the National Park Service will operate the Wildlife Park under the name "Display Area of Grand Teton National Park" to prevent confusion which might arise from having a Wildlife Park within a National Park. It is expected that the exhibit of large mammals will be continued much as it was under the Society's direction.

During the 1952 season the Wildlife Park was visited by approximately 120,000 people; this reflects an increase over 1951 in almost exact proportion, 14%, to the increase of visitors to the larger areas, Yellowstone and Grand Teton National Parks. There were 45,000 more visitors in 1952 than in 1948, the first full summer's operation. The Wildlife Park's constantly growing popularity, as well as improved

highways, were the factors largely responsible for this gratifying increase in attendance. Again in 1952 the Bison were the biggest attraction with the Elk second in drawing power. The Bison herd was exceptionally gentle during the season and was always available for close inspection by visitors. It was a very attractive and well-balanced herd of twenty-eight animals during the show season and drew considerable comment because of its good condition. Many people saw Bison and Elk for the first time and many more viewed them for the first time in a natural setting. After the close of the summer season ten animals were removed to prevent over-use of the available space; three of these went to the Salt Lake City Zoo and seven were taken by the State of Wyoming.

A comprehensive bird check list of the areas of Jackson Hole, Grand Teton National Park and Yellowstone National Park was compiled and published during the year. This list was well received by both amateur bird watchers and ornithologists visiting the region. The Wildlife Park's Popular Series publications of last year on Elk and Moose are used currently by National Parks in the Rocky Mountain area.

In the transfer of the Wildlife Park to the National Park Service, approximately half the assets in buildings and property were retained for the Jackson Hole Research Station of the New York Zoological Society. For the use of the Research Station there are about 120 acres of land, the laboratory, the library, several small cabins, miscellaneous tools and field equipment.

The research program of the 1952 season was outstanding. Institutions represented were the Universities of California, Illinois, Michigan, Nebraska and Wyoming, California State Polytechnic College, Utah State Agricultural College, Pennsylvania State College, Swarthmore College and Hampton Institute. Dr. Robert K. Enders of Swarthmore, who has been with the Station irregularly since 1947, again acted as coordinator of the research group while carrying on his own study of mammal populations in the area. His duties were to assist the director in academic help with the research group and to arrange for college credit for some of the graduate students on projects at the Station. Studies included Elk behavior, range management, Moose-Beaver relationships, effects of various altitudes on animal populations, life history studies (birds and mammals), distribution of intestinal protozoa in the larger mammals, and a problem on marking wild Elk in the field. Publications are constantly being completed on these studies and on those of past seasons.

TREASURER'S REPORTS

For the Year Ended December 31, 1952

Cornelius R. Agnew, Treasurer  
30 East 40th Street  
New York 16, N.Y.



# NEW YORK ZOOLOGICAL SOCIETY

## BALANCE SHEET

December 31, 1952

### Assets

Cash in banks and on hand		\$	163,947.77
Investments (approximate market value \$6,838,541.83)			5,601,704.32
Receivable from the City of New York:			
Appropriations for Zoological Park			
maintenance - calendar year 1952	\$	625,741.30	
Less amount received		<u>535,983.56</u>	89,757.74
Other receivables			9,865.64
Inventories			19,892.57
Construction in progress (jointly with the City of New York) - unencumbered balance \$12,722.57			100,000.00
Park facilities assets, less depreciation (note 1):			
Improvements to land and buildings in Zoological Park		123,839.86	
Equipment and miscellaneous items		<u>85,785.88</u>	209,625.74
Prepaid expenses and deferred charges			8,614.27
National collection of heads and horns, art gallery, library and sundry items			1.00
Collection of living animals			1.00
Jackson Hole Research Station buildings and equipment			<u>1.00</u>
		\$	<u>6,203,411.05</u>

### Liabilities

Accounts payable and accrued expenses			39,172.06
Fund reserves			
General Funds		4,373,154.28	
Endowment Funds		1,155,025.00	
Special Purpose Funds		363,632.53	
Reserve for Educational and Other Purposes		33,686.62	
Park Facilities Operating Fund		<u>238,740.56</u>	
			<u>6,164,238.99</u>
		\$	<u>6,203,411.05</u>

### Notes:

- (1) Park facilities assets are subject to an agreement with the City of New York, and the net income from park facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.
- (2) This balance sheet does not include the assets and liabilities of the Pension Fund.
- (3) Except for income from investments which is accounted for in the year received, this balance sheet is prepared on an accrual basis.

# FUND RESERVES

December 31, 1952

## General:

General Working Fund	\$	97,452.26
Anna M. Harkness Fund		1,049,503.22
Sage Fund		650,908.10
Mary Clark Thompson Fund		<u>2,575,290.70</u>
		4,373,154.28

## Endowment:

George F. Baker Fund	\$	107,620.17
Mary Thurston Cockcroft Fund		28,807.23
Robert Jaffray Fund		13,531.39
William Pyle Philips Fund		10,113.97
Rockefeller Fund		<u>994,952.24</u>
		1,155,025.00

## Special Purpose:

Cadwalader Animal Fund		19,620.91
Conservation Account		19,519.23
Damon Fund		15,633.75
Grant Fund for the Protection of Wildlife		24,329.46
Laurance S. Rockefeller Fund		125,815.57
Jacob H. Schiff Fund		105,115.51
Stokes Bird Fund		4,938.01
The New Aquarium Fund		18,959.25
Miscellaneous		<u>29,700.84</u>
		363,632.53

## Reserve for Educational and Other Purposes

Park Facilities Operating Fund		33,686.62
(see note)		<u>238,740.56</u>
	\$	<u>6,164,238.99</u>

Note: Park facilities assets are subject to an agreement with the City of New York and the net income from park facilities operations may be used only for the purchase of animals and the improvement of Zoological Park.

# SUMMARY OF CHANGES IN FUND RESERVES

Year ended December 31, 1952

## General Funds

Balance at December 31, 1951	\$ 4,339,560.84
Receipts and transfers	<u>88,716.69</u>
	4,428,277.53
Expenditures	<u>55,123.25</u>
Balance at December 31, 1952	\$ <u>4,373,154.28</u>

## Endowment Funds

Balance at December 31, 1951	1,142,046.57
Receipts	<u>12,978.43</u>
Balance at December 31, 1952	\$ <u>1,155,025.00</u>

## Special Purpose Funds

Balance at December 31, 1951	364,931.20
Receipts and appropriations	<u>173,009.47</u>
	537,940.67
Expenditures	<u>174,308.14</u>
Balance at December 31, 1952	\$ <u>363,632.53</u>

## Reserve for Educational and Other Purposes

Balance at December 31, 1951	42,428.44
Appropriation	<u>22,000.00</u>
	64,428.44
Expenditures	<u>30,741.82</u>
Balance at December 31, 1952	\$ <u>33,686.62</u>

GENERAL WORKING FUND

Year ended December 31, 1952

Balance at December 31, 1951		\$ 111,899.89
Add:		
Gifts	\$ 25,897.25	
Life memberships	2,325.00	
Conservation film royalties	8,746.21	
Pro-rata share of net profit on sales and redemptions of investments	1,271.39	
Value assigned to Jackson Hole Wildlife Research Station buildings and equipment acquired in 1952	1.00	
Balance from general income account	<u>2,434.77</u>	<u>40,675.62</u>
		152,575.51
Deduct:		
Appropriation for membership and general public relations activities for the year 1952:		
Appropriated	22,000.00	
Unexpended	<u>2,657.08</u>	
		<u>19,342.92</u>
Payment to Jackson Hole Wildlife Park, Inc. of Society's share of the operating expenses for the year 1952	12,500.00	
Payment on account of appropriation for grants-in-aid for the research activities of the Jackson Hole Research Station	4,340.00	
Grant to Woods Hole Marine Biological Laboratory	4,000.00	
Payment for consulting services and supervision of the Society's Conservation Film Program and of the Zoological Park's Film Program for the period from March 1 to December 31, 1952	5,500.00	
Payment on account of grant for the production of publications on the care and exhibition of wild animals in captivity	1,312.47	
Payment to provide maintenance and operating funds for the tropical research station at Trinidad, B.W.I. for the year ended April 30, 1953	8,000.00	
Payment to the Pension Fund of the Society's contribution on behalf of an employee over 45 years of age when admitted to the fund in 1944	<u>127.86</u>	<u>55,123.25</u>
Balance at December 31, 1952		<u>\$ 97,452.26</u>



# GENERAL INCOME ACCOUNT

Year ended December 31, 1952

Income:		
Income from investments		\$ 294,269.52
Annual dues		44,238.68
Sales of publications		3,409.18
Miscellaneous income		<u>9,557.35</u>
Total income		<u>\$ 351,474.73</u>
Expenses:		
Actuarial fee		633.00
Annual report		1,860.67
Aquarium research		4,922.11
Audit fee		2,100.00
Conservation		25,000.00
Custodian fees		3,161.00
Donations		125.00
Educational activities		10,861.34
Employee welfare		3,017.50
Executive office		17,568.30
Group life insurance		5,011.19
Insurance		9,252.39
Legal fees		2,621.91
Library		1,618.36
Members - meetings and services		19,034.36
Pensions:		
Fund contribution - 150% of employee contributions	\$ 18,810.69	
Auxiliary payments	<u>6,098.04</u>	24,908.73
Photography - salaries and supplies		8,059.64
Publication expenses:		
Salaries and other expenses	17,842.30	
"Animal Kingdom"	13,052.74	
"Zoologica"	<u>10,670.85</u>	41,565.89
Reception expense		2,301.51
Social security taxes		838.80
Traveling expense		4,998.54
Tropical research		15,825.00
Miscellaneous expense		<u>2,392.18</u>
		207,677.42
Appropriation for reserve for educational and other purposes		22,000.00
Park maintenance expenditures for the year 1952	745,103.84	
Less amount provided by New York City	<u>625,741.30</u>	
Amount expended by New York Zoological Society		119,362.54
Balance carried to General Working Fund		<u>2,434.77</u>
		<u>\$ 351,474.73</u>

Note: Except for income from investments which is accounted for in the year received, this statement is prepared on an accrual basis.

PARK FACILITIES

Statement of Income and Expense and Operating Fund

Year ended December 31, 1952

Balance of Park Facilities Operating Fund at December 31, 1951		\$ 217,902.89
Receipts from sales at restaurants, stands, etc. and from services		\$ 849,459.85
Less:		
Cost of merchandise sold	\$ 275,805.78	
Salaries and commissions	342,002.18	
Operating and maintenance supplies	78,351.57	
Depreciation	21,855.83	
Comprehensive public liability insurance	28,280.40	
Other operating and general expenses	<u>25,326.42</u>	<u>771,622.18</u>
Net income from sales at restaurants, stands, etc. and from services (see note)		<u>77,837.67</u> 295,740.56
Deduct:		
Appropriations for park improvements	47,000.00	
Appropriations for the purchase of animals	<u>10,000.00</u>	<u>57,000.00</u>
Balance of Park Facilities Operating Fund at December 31, 1952		\$ <u>233,740.56</u>

Note: Park facilities assets are subject to an agreement with the City of New York, and the net income from park facilities' operations may be used only for the purchase of animals and the improvement of Zoological Park.

GIFTS AND GRANTS RECEIVED  
Year ended December 31, 1952

Cancer Research:	
American Philosophical Society	\$ 750.00
National Cancer Institute	600.00
Damon Runyon Memorial Fund for Cancer Research	<u>2,500.00</u>
	3,850.00
Conservation Account:	
Childs Frick	1,000.00
DeForest Grant Scientific Research Fund:	
DeForest Grant	2,000.00
General Fund:	
Anonymous	\$ 1,000.00
George F. Baker, Jr.	1,000.00
C. Suydam Cutting	2,000.00
Mrs. Childs Frick	2,000.00
Childs Frick	6,977.25
David McAlpin	1,000.00
John H. Phipps	2,420.00
Rockefeller Brothers Fund, Inc.	2,500.00
John Roger	5,000.00
The Thorne Foundation	<u>2,000.00</u> 25,897.25
Jackson Hole Wildlife Park, Inc.:	
Laurance S. Rockefeller	15,313.85
The New Aquarium Fund:	
John Elliott	100.00
Mrs. Childs Frick	5,000.00
Childs Frick	13,843.75
Others (2)	<u>6.00</u> 18,949.75
Special Projects:	
The Bay Foundation, Inc.	25.00
The Roger Benjamin Fund, Inc.	50.00
Percy Chubb, II	100.00
Corporation Trust Company	250.00
Dr. Richard B. Dominick	25.00
Mrs. Lamot du Pont	75.00
Mrs. E. John Heidsieck	86.62
Gilbert W. Kahn	250.00
Miss Winifred Kirkland	<u>75.00</u>
Carried forward	\$ 936.62 <u>67,010.85</u>

GIFTS AND GRANTS RECEIVED (Continued)

Brought forward		\$ 67,010.85
Special Projects, continued:		
Brought forward	\$	936.62
Merrill Lynch, Pierce, Fenner & Beane		
Charitable Foundation, Inc.		250.00
Hubert E. and Anna Rogers Foundation, Inc.		100.00
The Scherman Foundation, Inc.		200.00
James Talcott Fund, Inc.		25.00
Time, Incorporated		250.00
Mrs. Seymour Wadsworth		50.00
Ogden White		50.00
Others (15)		<u>111.33</u>
		1,972.95
For Department of Tropical Research:		
Anonymous	\$	500.00
Dr. William Beebe		1,000.00
Mrs. Busch Greenough		1,000.00
Curt H. Reisinger		<u>1,000.00</u>
		3,500.00
For Wildlife Preserves, Inc. of		
New Jersey:		
Anonymous		<u>250.00</u>
		<u>5,722.95</u>
	\$	<u>72,733.80</u>

PERMANENT WILD LIFE PROTECTION FUND

Cash	\$	282.60
Investments (approximate market value \$159,695.00)		<u>131,004.26</u>
Amount of Fund at December 31, 1952	\$	<u>131,286.86</u>



THE PENSION FUND  
(Founded by Andrew Carnegie)

Statement of Operations

Year ended December 31, 1952

Balance at December 31, 1951:		
Investments (approximate market value \$966,200.00)		\$ 849,098.89
Uninvested balance of cash		<u>53,609.14</u>
		902,708.03
Receipts:		
Income from investments:		
Interest	\$ 13,276.52	
Dividends	<u>25,843.57</u>	
	39,120.09	
Contributions by employees	15,053.07	
Contributions by New York Zoological Society (150% of contributions by employees):		
Society	\$ 18,808.45	
Facilities	<u>3,771.20</u>	22,579.65
Special contributions with respect to permanent employees over 45 years of age:		
Contributions by employees	675.10	
Contributions by New York Zoological Society	<u>141.44</u>	816.54
Interest on special contributions	<u>125.28</u>	<u>77,694.63</u>
		980,402.66
Expenditures:		
Refunds on account of resignations	2,251.17	
Pension disbursements	<u>21,679.07</u>	<u>23,930.24</u>
		956,472.42
Profit (net) on sale of investments (Schedule 2)		<u>12,434.40</u>
Balance at December 31, 1952:		
Investments (approximate market value \$1,089,055.13)	941,819.22	
Uninvested balance of cash	<u>27,087.60</u>	
		\$ <u>968,906.82</u>

# PEAT, MARWICK, MITCHELL & Co.

CERTIFIED PUBLIC ACCOUNTANTS

SEVENTY PINE STREET

NEW YORK 5, N.Y.

## ACCOUNTANTS' REPORT

NEW YORK  
ATLANTA  
BALTIMORE  
BIRMINGHAM  
BOSTON  
BUFFALO  
CHARLOTTE  
CHICAGO  
CINCINNATI  
CLEVELAND  
DALLAS  
DENVER  
DETROIT  
GREENSBORO  
HOUSTON  
INDIANAPOLIS  
KANSAS CITY  
LINCOLN  
LOS ANGELES  
WATERBURY

MEMPHIS  
MILWAUKEE  
MINNEAPOLIS  
NEWARK  
NEW ORLEANS  
OKLAHOMA CITY  
OMAHA  
PHILADELPHIA  
PITTSBURGH  
PORTLAND  
ST. LOUIS  
SAN FRANCISCO  
SAN JOSE  
SEATTLE  
SHREVEPORT  
TERRE HAUTE  
TULSA  
WASHINGTON

AFRICA  
AUSTRALIA  
CANADA  
CONTINENTAL EUROPE  
CUBA  
GREAT BRITAIN  
HONG KONG  
INDIA  
JAPAN  
MEXICO  
SOUTH AMERICA

The Board of Trustees  
New York Zoological Society  
New York, N. Y.

We have examined the balance sheet of the New York Zoological Society as of December 31, 1952 and statements of the transactions of the various funds of the Society and of the Pension Fund for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We made a test-check of the subscriptions, donations and dues reported as received and of the income from investments, and found such items to be properly recorded. The securities recorded in the various funds were in agreement with schedules and other supplementary data prepared by the custodian of such securities held for the account of the Society. Bank balances were confirmed directly to us by the depositaries and were reconciled with the respective cash balances recorded in the accounts. We examined approved vouchers and paid checks for a number of representative expenditures.

Park facilities' assets are carried in the accounts at net depreciated book amounts as of December 31, 1940 plus subsequent additions at cost, less retirements. Provision for depreciation from January 1, 1941 to December 31, 1952 has been computed on the resulting book balances.

In our opinion, subject to the comments contained in the previous paragraph, the accompanying balance sheet and statements of transactions of the various funds of the Society present fairly the financial position of the Society at December 31, 1952 on the basis stated therein, and the changes in the funds of the Society for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

New York, N. Y.  
February 16, 1953

*Peat, Marwick, Mitchell & Co.*

REPORT OF THE AUDITING COMMITTEE  
OF THE  
NEW YORK ZOOLOGICAL SOCIETY

To the President and Board of Trustees  
of the New York Zoological Society

Dear Sirs:

We have examined the reports of Peat, Marwick, Mitchell & Company on their examination of the accounts of the New York Zoological Society, the Permanent Wild Life Protection Fund, and the Pension Fund of the Society for the year ended December 31, 1952. These reports indicate that the records of the Society have been examined in accordance with generally accepted auditing standards, and certify that the accounts of the Society, as set forth on the balance sheet and statements of various funds, present fairly the financial position of the Society as of December 31, 1952.

These reports also indicate that test checks have been made of the subscriptions, donations, dues and income from investments; that the securities recorded in the various funds were in agreement with the schedules and other supplementary data prepared by the custodian, City Bank Farmers Trust Company; and that bank balances have been confirmed by the depositaries.

We accordingly submit Messrs. Peat, Marwick, Mitchell & Company's reports to you as a satisfactory audit of the accounts of the Society, including the Fund Reserves, General Income Account, Pension Fund Account and the Facilities Account.

Respectfully submitted,

Percy Chubb, 2nd, Chairman  
William DeForest Manice  
J. Watson Webb

March 25, 1953









INCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold, and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

# NEW YORK ZOOLOGICAL SOCIETY

Organized 1895

## Presidents

I. Andrew H. Green .....	1895 to 1897
II. Levi P. Morton .....	1897 to 1909
III. Henry Fairfield Osborn .....	1909 to 1925
IV. Madison Grant .....	1925 to 1937
V. W. Redmond Cross .....	1937 to 1940
VI. Fairfield Osborn .....	1940

## First Vice-Presidents

I. J. Hampton Robb .....	1895 to 1897
II. Henry Fairfield Osborn .....	1897 to 1909
III. Samuel Thorne .....	1909 to 1916
IV. Madison Grant .....	1916 to 1925
V. Frank K. Sturgis .....	1925 to 1932
VI. W. Redmond Cross .....	1932 to 1937
VII. Kermit Roosevelt .....	1937 to 1939
VIII. Alfred Ely .....	1939

## Second Vice-Presidents

I. Charles E. Whitehead .....	1895 to 1902
II. John L. Cadwalader .....	1902 to 1915
III. Madison Grant .....	1915 to 1916
IV. Frank K. Sturgis .....	1916 to 1925
V. Henry D. Whiton .....	1925 to 1930
VI. Kermit Roosevelt .....	1930 to 1937
VII. Alfred Ely .....	1937 to 1939
VIII. Laurance S. Rockefeller .....	1939

## Treasurers

I. L. V. F. Randolph .....	1895 to 1901
II. Charles T. Barney .....	1901 to 1903
III. Percy Rivington Pyne .....	1903 to 1922
IV. Cornelius R. Agnew .....	1922

## Secretaries

I. Madison Grant .....	1895 to 1925
II. William White Niles .....	1925 to 1935
III. Fairfield Osborn .....	1935 to 1940
IV. Harold J. O'Connell .....	1941

## Chairmen, Executive Committee

I. Charles E. Whitehead .....	1895 to 1896
II. Henry Fairfield Osborn .....	1896 to 1903
III. Charles T. Barney .....	1903 to 1907
IV. Henry Fairfield Osborn .....	1907 to 1909
V. Madison Grant .....	1909 to 1937
VI. W. Redmond Cross .....	1937 to 1940
VII. Laurance S. Rockefeller .....	1940 to 1943
VIII. Fairfield Osborn .....	1943 to 1945
IX. Laurance S. Rockefeller .....	1945

## Directors

I. William T. Hornaday, Zoological Park .....	1896 to 1926
II. Charles H. Townsend, New York Aquarium .....	1902 to 1937
III. W. Reid Blair, Zoological Park .....	1926 to 1940
IV. Allyn R. Jennings .....	1940 to 1941
V. Charles M. Breder, Jr., New York Aquarium .....	1937 to 1943
VI. John Tee-Van, Zoological Park .....	1952



## BOARD OF TRUSTEES

City of New York  
Ex-officio

Hon. Vincent R. Impellitteri, The Mayor  
Hon. Robert Moses, Commissioner of Parks

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### Class of 1953

Archibald S. Alexander  
Harry Payne Bingham  
A. Raymond Dochez  
Robert G. Goelet  
DeForest Grant  
Eugene Holman

Warren Kinney  
William DeForest Manice  
Harold J. O'Connell  
Landon K. Thorne  
J. Watson Webb  
Ogden White

### Class of 1954

Cornelius R. Agnew  
Percy Chubb, 2nd  
C. Suydam Cutting  
Alfred Ely  
Marshall Field  
Childs Frick

Henry Clay Frick  
Archer M. Huntington  
David H. McAlpin  
John H. Phipps  
Clendenin J. Ryan  
Harrison Williams

### Class of 1955

George F. Baker, Jr.  
George C. Clark  
F. Trubee Davison  
John Elliott  
Robert I. Gannon, S.J.  
Peter Grimm

Fairfield Osborn  
Eben Pyne  
Laurance S. Rockefeller  
Archibald B. Roosevelt  
John M. Schiff  
Edwin S. Webster

## OFFICERS OF THE SOCIETY

Fairfield Osborn, President

Alfred Ely,  
Laurance S. Rockefeller,  
Donald T. Carlisle,  
Vice Presidents

Harold J. O'Connell, Secretary

Cornelius R. Agnew, Treasurer

General Office:  
30 East 40th Street  
New York 16, N.Y.

## EXECUTIVE COMMITTEE

Laurance S. Rockefeller, Chairman

Cornelius R. Agnew,

ex-officio

John Elliott

Alfred Ely

Robert G. Goelet

DeForest Grant

Warren Kinney

David H. McAlpin

Robert Moses,

ex officio

Harold J. O'Connell,

ex-officio

Fairfield Osborn,

ex-officio

## PENSION BOARD

Fairfield Osborn, Chairman

Cornelius R. Agnew

Fred Archer

Christopher W. Coates

Percy Chubb, 2nd

Alfred Ely

Leonard J. Goss

Warren Kinney

Eben Pyne

Herbert F. Schiemann

John Tee-Van

## COMMITTEES OF THE SOCIETY

### NOMINATING COMMITTEE FOR BOARD OF TRUSTEES

E. Roland Harriman, Chairman  
William M. Chadbourne Samuel Thorne

### FINANCE COMMITTEE

David H. McAlpin, Chairman  
Cornelius R. Agnew, Fairfield Osborn,  
ex-officio ex-officio  
DeForest Grant John Schiff

### AUDITING COMMITTEE

Percy Chubb, 2nd, Chairman  
C. Suydam Cutting Fairfield Osborn,  
William DeForest Manice ex-officio  
Harold J. O'Connell, J. Watson Webb  
ex-officio

### EDITORIAL COMMITTEE

Fairfield Osborn, Chairman  
James W. Atz Lee S. Crandall  
William Beebe Leonard J. Goss  
William Bridges James A. Oliver  
Christopher W. Coates John Tee-Van

### SCIENTIFIC ADVISORY COUNCIL

A. Raymond Dochez Caryl P. Haskins  
Alfred Emerson K. S. Lashley  
W. A. Hagan John S. Nicholas

### HEADS AND HORNS COMMITTEE

Alfred Ely, Chairman  
Laurance S. Rockefeller F. Carrington Weems  
Samuel B. Webb

## STAFF

John Tee-Van, Director  
Leonard J. Goss, Assistant Director

## ZOOLOGICAL PARK

Robert M. McClung, Acting Curator, Mammals & Birds  
Grace Davall, Assistant Curator, Mammals & Birds  
James A. Oliver, Curator, Reptiles  
Leonard J. Goss, Veterinarian  
Charles P. Gandal, Assistant Veterinarian  
Gordon Cuyler, Administrative Assistant  
Herbert J. Knobloch, Assistant Curator, Education  
John V. Quaranta, Research Associate, Animal Behavior  
Quentin Melling Schubert,  
Superintendent, Construction & Maintenance  
Edward Kearney, Manager, Facilities Department  
  
Lee S. Crandall, General Curator Emeritus  
William Beebe, Honorary Curator, Birds

## AQUARIUM

Christopher W. Coates, Curator & Aquarist  
James W. Atz, Assistant Curator  
Ross F. Nigrelli, Pathologist  
Myron Gordon, Geneticist.  
C. M. Breder, Jr., Research Associate in Ichthyology  
Homer W. Smith, Research Associate in Physiology

## DEPARTMENT OF TROPICAL RESEARCH

William Beebe, Director Emeritus  
  
Jocelyn Crane, Assistant Director  
Henry Fleming, Entomologist  
William K. Gregory, Associate  
John Tee-Van, Associate



GENERAL

Herbert F. Schiemann, Comptroller  
William Bridges, Editor & Curator, Publications  
Dorothy Reville, Editorial Assistant  
Sam Dunton, Photographer

-----

AFFILIATE

CONSERVATION FOUNDATION

President  
Fairfield Osborn

Executive Vice-president  
Samuel H. Ordway, Jr.

Vice-presidents

George E. Brewer, Jr.  
Donald T. Carlisle

A. William Smith  
Robert G. Snider

Staff

Stephen W. Bergen  
John C. Gibbs

Hugh J. Ross  
Peter M. Stern

# BY-LAWS OF THE NEW YORK ZOOLOGICAL SOCIETY

## ARTICLE I • MEMBERS

SECTION 1. The present members and such others as hereafter shall become members in accordance with these by-laws shall be the members of this Society.

SEC. 2. Annual, contributing and school members shall be elected by the Board or Executive Committee and, upon election, shall qualify for such membership by payment of dues for the first year commencing on the date of their election. No organizations other than schools shall be eligible as such for Society membership.

SEC. 3. Annual dues of annual members shall be \$15, and of contributing and school members \$25. Any person who shall fail to qualify within three months after his election shall be deemed to have declined his election.

SEC. 4. Any member who shall fail to pay his annual dues within three months after notice that they have become due and demand therefor, shall cease to be a member of the Society. He may, however, be reinstated by the Board or Executive Committee for good cause shown.

SEC. 5. Any person who shall have donated to the Society, in the aggregate, cash or the equivalent in value of any of the following amounts shall be eligible for election, by the Board or Executive Committee, to the class of membership appearing opposite such amount:

\$ 300.00	Life Membership	\$ 5,000.00	Founder
\$1,000.00	Patron	\$10,000.00	Founder in Perpetuity
\$2,500.00	Associate Founder	\$25,000.00	Benefactor

An annual member who has paid dues for five consecutive years and a contributing or school member who has paid dues for three consecutive years, may thereafter, at any time, upon payment of the difference between the aggregate dues already paid and \$300, but in no case less than \$100, be elected a Life Member. Upon the death of a trustee, his widow shall be eligible for election, by the Board or Executive Committee, to Life Membership.

SEC. 6. The Board or Executive Committee may elect to membership in the following classes persons who, in their judgment, have achieved the qualifications hereinafter specified:

*Fellows*:—Persons of marked scientific achievement.

*Honorary Members*:—Persons who have rendered distinguished services in the science of zoology or natural history.

*Corresponding Members*:—Persons who have rendered marked services to the Society through correspondence.

SEC. 7. All but annual, contributing and school members shall be exempt from payment of annual dues.

SEC. 8. Benefactors and Founders in Perpetuity shall have the power to designate their respective successors, who shall thereupon be entitled to all the rights and privileges of their predecessors, including the right in turn to desig-

nate their successors. Such designation shall be in writing indorsed or attached to the certificate of membership or by last will and testament.

## ARTICLE II • PRIVILEGES OF MEMBERS

SECTION 1. Each annual, contributing and school member shall be entitled to a member's ticket, ten tickets of admission to the Zoological Park and Aquarium on pay days, a copy of the annual report, a copy of the official periodical publication of the Society, and shall be entitled also to the privileges of the Library and Administration Building at the Zoological Park.

SEC. 2. Life Members shall be entitled to all the privileges of annual members and also to ten additional tickets of admission to the Zoological Park and Aquarium on pay days.

SEC. 3. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall be entitled to all the privileges of Life Members and also to receive the Society's scientific publication "Zoologica."

SEC. 4. A member's ticket, issued annually, shall admit the member and his immediate family to the Zoological Park and Aquarium on pay days and to lectures and special exhibitions. It may be used by the member's immediate family.

SEC. 5. Each member, other than a member elected pursuant to Article I, Section 6, shall be entitled to one vote at each meeting of the Society.

SEC. 6. Any member who shall fail to comply with the provisions of these by-laws may be suspended from the privileges of membership or dropped from the rolls of the Society, by a majority vote of those present at a duly constituted meeting of the Board or Executive Committee.

## ARTICLE III • MEETINGS OF THE SOCIETY

SECTION 1. The Annual Meeting of the Society shall be held on the first Tuesday in March in each year, or on such day thereafter and at such time and place as may be designated by the Board or Executive Committee.

SEC. 2. Special Meetings of the Society may be called upon order of the President or Chairman of the Executive Committee or on the written request of ten Trustees delivered to the Secretary.

SEC. 3. Notice of each annual or special meeting of the Society, stating the time, place and purpose thereof, shall be mailed, at least ten days before an annual and three days before a special meeting, to each member at his address last recorded with the Secretary.

SEC. 4. At all meetings of the Society twenty members shall constitute a quorum.

## ARTICLE IV • BOARD OF TRUSTEES

SECTION 1. The property, affairs and business of the Society shall be managed and controlled by a Board of Trustees consisting of thirty-six members

divided into three equal classes, together with the Mayor and the Commissioner of Parks of the City of New York who shall be members *ex officio* of the Board. Each class of elected trustees shall hold office for three years and until its successors are elected. The term of office of one class shall expire each year and its successor shall be elected at the annual meeting of the Society.

SEC. 2. No person shall be eligible for election to the Board unless he shall be either a Benefactor, Founder in Perpetuity, Founder, Associate Founder, Patron or Life Member and, excepting to fill vacancies, unless his name shall have been posted as a candidate by the Nominating Committee or by not less than ten members in writing in a conspicuous place in the office of the Society not less than ten days before the annual meeting.

SEC. 3. Vacancies in the Board may be filled for the unexpired term by the Board or Executive Committee at any regular or special meeting, by ballot, by a majority vote of the members present; but no person shall be eligible for election to fill a vacancy unless he shall have been nominated at a prior or special meeting of the Board or Executive Committee.

SEC. 4. The Board shall hold an annual meeting in December in each year, on a date and at a time and place designated by the Board or Executive Committee. Other meetings of the Board may be called upon order of the President or Chairman of the Executive Committee or at the written request of five Trustees delivered to the Secretary. Twelve Trustees shall constitute a quorum.

SEC. 5. Notice of each meeting of the Board shall be mailed to each Trustee at least seven days before the annual meeting and at least three days before any other meeting.

SEC. 6. A Trustee who shall fail to attend three consecutive meetings of the Board, without being excused by the Board, shall be deemed to have resigned as a Trustee.

SEC. 7. The Board at its annual meeting in each year shall appoint three standing committees — an Executive Committee, a Finance Committee and an Auditing Committee — each of which shall serve for one year, or until its successors are appointed. The Board or Executive Committee may appoint such other Committees and delegate to them such powers as they may deem advisable or necessary. The President shall designate the Chairman of each committee.

## ARTICLE V • OFFICERS

SECTION 1. The Board of Trustees at its Annual Meeting in each year shall elect a President, a First Vice President, a Second Vice President, a Treasurer and a Secretary from among the Trustees. The said officers shall hold office respectively for the ensuing year and until their successors are elected. Any vacancy for an unexpired term may be filled by the Board or Executive Committee.

SEC. 2. The President shall preside at all meetings of the Society and of the Board, exercise general supervision of the affairs of the Society, from time to time call attention of the Board to such subjects as in his opinion require consideration and shall exercise the usual functions pertaining to his office. He shall be a member *ex officio* of all standing committees.



SEC. 3. The Vice Presidents, in order of seniority, in case of death, absence, resignation or disability of the President shall perform his duties and exercise his powers.

SEC. 4. The Treasurer shall collect, receive and have custody of the funds and securities of the Society subject to the order of the Board or Executive Committee and shall keep all funds of the Society on deposit with a bank or trust company approved by the Board or Executive Committee. He shall pay all bills and appropriations as ordered by the Board or Executive Committee, shall keep regular and correct accounts and shall submit reports to the Society at its Annual Meeting, to the Board at all Regular Meetings and to the Executive Committee at each meeting. He shall be a member *ex officio* of the Executive Committee. The books of account of the Society shall be open at all times to the inspection of the Trustees and the Executive, Finance and Auditing Committees. The fiscal year of the Society shall be the calendar year.

SEC. 5. The Secretary, unless otherwise ordered by the Board or Executive Committee, shall cause notices to be issued of all meetings of the Society, the Board and the Executive Committee, attend all such meetings and keep the minutes thereof. Together with the President or a Vice President he shall execute all contracts and instruments on behalf of the Society, and shall affix the seal of the Society when authorized to do so by the Board or Executive Committee. He shall conduct the correspondence of the Society, have custody of the seal, archives and books, other than books of account, and perform the usual duties pertaining to his office and such other duties as the Board or Executive Committee may direct. He shall be a member *ex officio* of the Executive Committee.

SEC. 6. The Board or Executive Committee may appoint an Assistant Treasurer or an Assistant Secretary and such other officers or officials as may be deemed necessary to serve at the pleasure of the Board or Executive Committee, and may define their respective duties. A bank or trust company organized under the laws of New York and having its principal place of business in New York City may be appointed Assistant Treasurer and may be made depository of the funds and custodian of the securities and investments of the Society upon such terms and with such powers as may be delegated to it by the Board or Executive Committee.

## ARTICLE VI • COMMITTEES

SECTION 1. *Executive Committee* — This Committee shall consist of eight Trustees, together with the President, Treasurer and Secretary as members *ex officio*. Vacancies shall be filled by the Board or by the Committee itself.

In the interim between meetings of the Board, the Executive Committee shall manage and control the property, business and affairs of the Society and exercise all the powers of the Board to the extent not delegated to other Committees or contrary to law. It shall report at each regular meeting of the Board.

Regular meetings of the Executive Committee shall be held on the third Tuesday in each month, unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman or at the written request of three members of the Committee delivered to the Secretary. Four members including the Chairman shall constitute a quorum.

The Executive Committee shall appoint each year a Nominating Committee

which shall hold office for one year and until its successors are appointed.

The Executive Committee shall have power to fix the salaries of the officers and employees of the Society.

**SEC. 2. Finance Committee** — This Committee shall consist of not less than three Trustees and the Treasurer as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Finance Committee shall have power to sell securities and other investments belonging to the Society and to reinvest proceeds of sale and invest any other funds of the Society available for investment, in such securities or investments as it may deem wise. It shall report quarterly to the Executive Committee all purchases and sales of securities and investments made by it. It may submit to the Board or Executive Committee its recommendations with regard to sales or purchases of securities or other investments.

Notwithstanding the power hereby conferred, the Board or Executive Committee may, at any time, direct the sale of any securities and investments held by the Society, or direct the reinvestment of any proceeds of sale or investment of other funds of the Society available for investment in such securities or investments as it may specify.

All transfers and assignments of the securities registered or standing in the name of the Society shall be executed under the seal of the Society by the President or a Vice President, together with the Secretary or Treasurer.

The report of the Chairman of the Finance Committee shall be sufficient authority to the Chairman of the Executive Committee for approving drafts for purchases of securities or investments.

**SEC. 3. Auditing Committee** — This Committee shall consist of three members, other than members elected pursuant to Article I, Section 6, together with the President and the Secretary as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Auditing Committee shall cause the accounts of the Treasurer and any other accounts of the Society to be audited and certified annually, or as often as it deems advisable, by a certified public accountant of its selection and shall report to the Board at its annual meeting. It shall cause the annual statement of the Treasurer to be audited and certified by such certified public accountant before it is submitted to the Board, and shall annually, or as often as it deems advisable, examine and verify the securities and other investments belonging to the Society.

**SEC. 4. Nominating Committee** — This Committee shall be composed of three members other than Trustees and members elected pursuant to Article I, Section 6. Vacancies therein shall be filled by the Executive Committee. This Committee shall select twelve candidates, to succeed the outgoing class of Trustees, to be voted upon at the ensuing annual meeting. Such candidates shall be selected from among the Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons and Life Members of the Society. The names of such candidates shall be posted in a conspicuous place in the office of the Society at least ten days before the annual meeting.

## ARTICLE VII • AMENDMENTS

**SECTION 1.** These By-Laws may be amended, either by change or repeal of any provision or the adoption of new provisions, at any meeting of the Board by majority vote of the Trustees present, provided such proposed amendment is set forth in full in the notice of such meeting.







